Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
TECHNOLOGICAL ADVISORY COUNCIL (TAC)	)	
TECHNICAL INQUIRY INTO REFORMING TECHNICAL	)	
REGULATIONS	)	ET Docket No. 17-215

24 October, 2017

Introduction

1. The FCC's Technological advisory Council (TAC) is inviting comments to gather feedback from users subject to FCC technical regulations and affected by the burden they impose, to help identify technical rules that may be ripe for change. The TAC also solicits input on how the regulatory process can be made more efficient and timely.

2. This commenter is an Extra-Class licensed amateur radio operator, subject to Part 97 Rules. These comments primarily cite a specific rule that inhibits full usage of commenter's station, while failing to protect other communications from interference. This rule continues to impose an unfair and unnecessary regulatory burden on one specific, deliberately singled-out class of operators. Documentation is presented that clearly shows multiple misuses of the regulatory process in the formulation of this rule. Suggestions are made to how the Commission might correct the unwarranted consequences of this proceeding and might avoid similar shortcomings in future regulatory actions.

3. Copies of documents related to this proceeding are attached as numbered exhibits, including FCC releases that may no longer be readily available for viewing, since the Commission's archives of docketed proceedings posted on the Electronic Comment Filing System do not extend prior to 1992. Throughout this discussion, "(para. xx)" refers to a numbered paragraph in the cited document.

Background

4. From the earliest days of licensed amateur radio operation in the U.S., the maximum legal power limit was defined in terms of one kilowatt input power to the RF-generating stage of the transmitter. As vacuum tube and later, transistorized technology were developed, and various modes of emission and new forms of technology evolved, a power standard based on DC input to the anode of the final amplifying stage became the rule. Although the efficiency of various classes of service of vacuum tube and transistor finals may vary to a degree, the input-power standard resulted in a roughly equivalent maximum legal effective output power level for all classes of final amplifiers and authorized modes of emission.

5. In 1982 the FCC released a Notice of Proposed Rulemaking that declared that the historic DC input standard, which had been in place for over 50 years, was "obsolete" (in the words of one official, "not so much a problem as an *embarrassment*" to the FCC). The NPRM proposed a new power standard to be based on *peak envelope* output power from the transmitter.

Discussion

6. The purpose for having a maximum power rule for the amateur and other radio services is to limit interference. The FCC argued that the old DC input method of power measurement was a safety hazard to the Commission's field engineers conducting station inspections, since they might have to physically connect measuring instruments to high voltage circuitry in unfamiliar transmitters. In this Notice of Proposed Rulemaking, the FCC clearly stated that the intent of this change was to **improve the method of measuring transmitter power, not to change power levels amateurs actually used,** and that the Commission were **committed to fairness to all amateur operators**.

7. Due to technical characteristics of the various authorized modes of emission, instantaneous peaks may vary widely relative to a given average power output from a transmitter. The amplitudes of occasional modulation peaks are not directly germane to the interfering potential of a transmitted signal. It is average (mean) power, not instantaneous peaks, that determine how much the output from a transmitter heats up a resistive dummy load, how bright it lights an incandescent lamp connected as a load to the transmitter, how much it deflects an RMS-reading measuring instrument such as a thermocouple rf ammeter inserted in the transmission line to the antenna, and most importantly, the strength and therefore the interference potential of a transmitted signal.

8. The FCC's rationale for the peak envelope power standard was based on alleged difficulty in determining meaningful power levels for one specific mode of emission amongst numerous used by amateur operators, single-sideband suppressed carrier (SSB) voice telephony. With no resting carrier as a reference, the output power level fluctuates in step with the voice waveform, making it difficult to define and measure average output power from a SSB transmitter using instruments available at the time of the proposal. The peak envelope power standard was chosen chiefly for the convenience of the Commission in those rare instances when amateur stations might be physically inspected by Commission personnel.

9. A simple resolution of the problem would have been to regulate transmitter power in terms of average output power or carrier power, except in the case of fluctuating carrierless modes like SSB, and regulate those modes in terms of peak power. Amateur emissions can be broadly categorized into four distinct classes: (1) steady carrier modes like on/off CW telegraphy, frequency-shift keyed radio-teletype and frequency-modulated voice and image; (2) full carrier amplitude modulated modes like double-sideband Amplitude Modulated voice transmission (the same modulation scheme used for standard medium-wave broadcasting); (3) suppressed carrier modes like single-sideband voice and image, including certain digital data modes; (4) pulse (P) transmission. An appropriate power standard would be defined for each of these classes of modes to preserve approximately the same legal output power as existed prior to the changes in the rule. Alternatively, a maximum peak output power standard could have been estimated for each of these classes to most closely preserve previously existing power privileges. Because of the unique nature of Pulse (P) emissions, the only appropriate power standard emission would be average/mean output power, since those emissions normally transmit with an extremely high peak-to-average ratio.

10. The Commission opted instead to impose a one-size-fits-all peak-power standard to all emission types regardless of their peak-to-average characteristics. As a result, the historic power privileges for most authorized modes of emission were changed. The pre-existing power level was preserved for only one class of emission widely used by amateurs (the one that had perplexed the Commission in

determining a power standard in the first place), suppressed carrier SSB voice and image. Steady carrier modes like CW, FM and RTTY enjoyed a two-fold increase in legal power privileges, while amplitude-modulated carrier modes, primarily conventional AM voice transmission (A3E), were reduced to approximately half their previous legal power levels. The effective legal output power for Pulse emissions was so greatly diminished that this mode was effectively eliminated for the majority of useful amateur experimentation, radar for example.

11. The Commission's argument was that it would have been too difficult to compose easily understandable rules to account for all authorized modes for the amateur service while keeping existing power levels unchanged, and that it would be costly to train FCC field personnel to use a different power standard for each of these classes of emissions, even though a field engineer would likely be thoroughly familiar with methods of power transmitter power measurement for all the emission modes authorized for amateur use. This assertion notwithstanding, the FCC had no problem with making a simple change to the CB rules when they changed the power standard for that service from input to output power:

47CFR § 95.410 (CB Rule 10) How much power may I use?
(A) Your CB station transmitter power output must not exceed the following values under any conditions:
AM [Amplitude Modulation] - 4 watts carrier power [CP]
SSB [Single Side-Band] - 12 watts peak envelope power [PEP]

In summary, the FCC reduced the legal power privileges for full-carrier AM and effectively eliminated amateur experimentation with pulse type emissions, *because the Commission perceived the lack of a satisfactory power standard for SSB.*

12. As comments to the NPRM poured in, by far the greatest concern was the reduction of the legal power level for full-carrier AM voice (emission type A3E), but the FCC disregarded those comments and attempted to placate AM operators by grandfathering the old DC input power limit for an additional period of seven years, set to expire in 1990. However, the Commission promised in the Report and Order to reconsider the AM power reduction "if there is any justification to do so". The likely assumption was that interest in A3E (AM) was steadily declining and that by 1990 few, if any amateurs would still be using that mode.

13. Petitions for Reconsideration were filed immediately after the release of the R&O, but the Commission summarily disregarded issues brought up in those petitions and the large number of supporting comments. The commission's responses were filled with omissions and distorted, misleading and deceptive statements, and failed to address numerous of concern to the AM community, as will be exhibited in pages to follow.

14. During the "grandfather" period, one individual amateur licensee, Glenn Baxter K1MAN (now deceased) took it on himself to file an appeal in federal court against the AM power reduction, although court action at that time was probably premature, since administrative remedies had not been fully exhausted (the promised 1990 reconsideration at the expiration of the grandfather clause). Despite advice to the contrary, Baxter went ahead with his appeal, which was denied by the Court. He then petitioned for a review at the US Supreme Court, which the Court declined to hear. This court appeal apparently hardened the FCC's resolve to not change scheduled AM power reduction at the 1990 sunset date, no matter what.

15. As the 1990 deadline approached, despite the predicted decline, interest in amateur radio A3E had steadily increased, with AM activity heard regularly in all the lower HF/MF bands. Most commercially-manufactured amateur transceivers were including AM capability. Nevertheless, the Commission had showed no sign of following through with its stated commitment to revisit the AM power issue. Three Petitions for Rulemaking were submitted requesting in one manner or another to

eliminate the "sunset clause" and extend the historic AM power level indefinitely. Using the same deceptive lines of reasoning, distortions, omissions and misstatements of facts, the Commission denied all three petitions and subsequent Petitions for Reconsideration.

Initial NPRM, PR Docket 82-624 (Exhibit 1):

16. (Para. 2) ...*It is also important to make clear that the intention of this proceeding is limited to improving the definition and measurement of transmitting power. We desire to avoid changing the actual power that amateur radio stations use.*
(Para. 24) ...*We cannot stress enough our commitment to be fair to the interests of all amateur operators.*

Despite these statements of principle, the proposed rules would change the actual power levels of the majority of modes used by amateurs. The only mode left essentially unchanged was SSB voice. While the Commission stressed its commitment to be fair to the interests of all amateur operators, existing privileges were reduced for users of full-carrier amplitude modulation, and for those who might have experimented with pulse type transmission.

17. The Commission tacitly admits at the outset that most amateur licensees could not be expected have the expertise nor test equipment necessary to measure the peak envelope output power of their transmitters. Under the previous rules, amateurs transmitting at more than 90% of the legal limit were required to possess measuring instruments capable of accurately determining the input power. (Para. 4) ...*with a variety of means other than 'accurate measurement' available to operators to determine compliance with the power limitation rules, it is difficult to envision this rule serving a useful purpose.* But the Commission fails to suggest what other "variety of means" amateurs might use to determine whether they are complying with the power limit, if they didn't accurately measure their power.

Report and Order (Exhibit 2):

18. The Commission admitted that by far the most significant concern expressed in the comments was the effect the proposal would have on AM voice operations, and then went on to make the implausible claim that (Para. 6) ...*we still cannot justify a permanent and continuous expense in terms of equipment and training that would be necessary of us to be prepared to make a special power measurement for this class of operations.* Since the same FCC field engineers would be inspecting stations in other services such as CB, broadcasting and land mobile, it is highly unlikely that these personnel would not be trained and knowledgeable in a variety of methods of power measurement for a variety of emission types. In the case of A3E emission, this would entail nothing more than observing a different peak power standard for AM transmitters, or measuring the mean output power or carrier power instead of peak envelope power (see 47 CFR 95.410). Not only is this statement untruthful and absurd, it is an affront to the dignity and expertise of Commission field personnel, since it is likely that these same personnel would be called on to serve a variety of radio services regulated by the Commission.

19. The Commission goes on to state (Para. 6): ...*in the worst case, the actual power reduction (a reduction of 3 dB) would generally be insignificant in terms of actual communications effectiveness...*, contradicting its own statement in the original NPRM, where the Commission acknowledges that even a 1 dB decrease in power would be significant. (Para. 15, Exhibit 1) ...*Limitations on SSB emissions would be more restrictive by approximately 1 dB. While the Commission finds it difficult to consider this change significant in terms of actual communications capability, we recognize that, considering the equipment that amateur r operators may already own, some operators my consider a* ***1dB decrease in the maximum authorized power to be significant.***

20. The significance of a reduction in transmitter power depends on the signal-to-noise ratio of the received signal. When a signal is tens of decibels above the background noise and interference level, a 3 dB reduction in power would be insignificant and probably unnoticeable. However, when the signal is near the background noise level or subject to strong interference, even a 1 dB difference in transmitter power may be significant, sometimes making the difference between readability and non-readability. This could be even more a concern today than in 1983 due to the general increase in ambient noise level caused by the proliferation of interference-producing electrical and electronic devices since then.

Petitions for Reconsideration

20. Following the Report and Order of 22 July 1983, three Petitions for Reconsideration were filed, by Floyd Dunlap, president of Society for Promotion of Amplitude Modulation **(Exhibit 3)**, Donald Chester K4KYV **(Exhibit 4)**, and Kevin Alfred Strom. A copy of Strom's Petition could not be located.

21. These Petitions reiterated that the Commission singled out one emission mode, AM DSB (A3E) for a power reduction, while increasing the maximum legal power up to 3 dB for users of certain other modes. It was pointed out that amateur radio was undergoing a resurgence of interest in AM (which continues to this day), and that the Commission did not exhaust every possible avenue to achieve the stated goals of the power limit proceeding without reducing privileges of any class of operators. It was also pointed out that the pre-existing power limit under the previous rules could have easily been expressed in terms of the Commission's chosen new standard, peak envelope power.

22. In a **Memorandum Opinion and Order** dated September 5 1984 **(Exhibit 5),** the Commission rejected all these arguments and ordered the Petitions denied. An incredible new phony argument was interjected, claiming that to retain the pre-existing AM power level by re-expressing the rule in terms of the new peak envelope power standard (para. 10), *...we cannot reconcile this argument with the requirements of Section 342 of the Communications Act of 1934... which prescribes that one should use the minimum amount of power necessary to carry out the communication desired.* This reasoning is completely erroneous and a mis-application of Section 324, which is a general requirement that all radio services use the un-enumerated minimum power deemed necessary to maintain the desired communication, therefore completely irrelevant to the amateur power limit rule which states the enumerated maximum legal power that a station may use under any circumstances. No attempt was made to explain or justify why an AM transmitter, operating at the previous historical legal limit, might not have been using the minimum power necessary to maintain the desired communication under a particular set of propagation and interference conditions.

Lawsuit filed against the Commission

23. Following the FCC's dismissal of the Petitions for Reconsideration, Mr Baxter filed a civil lawsuit against the FCC in the U.S. Court of Appeals in September 1984 **(Exhibit 6)**. As an interested party, this commenter submitted a statement to the Court in September 1985

(Exhibit 7). Baxter presented several well-stated valid points in his written brief, but served as his own lawyer in court and reportedly made a very poor presentation. The judge summarily dismissed the lawsuit, stating that the Court was obliged to defer to the expertise of the Commission in these highly technical matters. Baxter then filed an appeal to the U.S. Supreme Court, but the Court declined to hear the case.

24. It became apparent that Baxter's ill-attempt in court had hardened the FCC's resolve, making it much more difficult to persuade them to revisit the AM power issue in 1990 as they had initially promised to do. Sometime later at an FCC Forum at a national amateur radio convention in Dayton, Ohio, John Johnston, then chief of the Bureau in charge of amateur radio rulemaking, was asked if the Commission intended to follow through on its previously stated commitment to reconsider the AM power issue in 1990 when the seven-year Grandfather provision, as stated in the R&O, was set to expire (see para.6, Exhibit 2). Mr Johnston replied with a smirk, "You took us to court, remember?" Baxter had other issues with the Commission, and his repeated refusals to cooperate undoubtedly further prejudiced the FCC at the expense of the amateur AM community.

Rulemaking Petition filed to FCC to Phase Out AM (Exhibit 8).

25. In an undated Petition for Rulemaking submitted sometime in the early to mid-1980s , one W. B. Prechtl (amateur call sign W3KO) requested that the Commission phase out Double Sideband Full Carrier Amplitude Modulation (A3E) usage below 30 MHz in the amateur service. Attached is a copy of this Petition, a comment dated July 1990 submitted by this commenter, and the Commission's Order in 1981 to deny a similar Petition. As documented below, this Petition was used as an integral part of the FCC's strategy to deny its previously stated commitment to reconsider the AM power reduction in 1990.

1990 Petitions to FCC to Retain Historic AM Power

26. In the FCC's Report and Order dated 22 July 1983 (Exhibit 2), the proposed peak envelope output power standard was enacted into the rules. Included in the R&O (Para. 6) ...We, *therefore, have decided to limit the grandfather provisions to a period ending June 1, 1990.* ***If it appears there is any justification to do so, we will reconsider the matter at that time.*** (emphasis mine) "

As the June, 1990 deadline approached, no action by the FCC to reconsider was apparent, so Petitions for Rulemaking were submitted by two individual amateur licensees and the American Radio Relay League **(Exhibits 9, 10, 11).** This commenter submitted a comment in response to those petitions **(Exhibit 12).**

1300 Modes of Emission

27. Prior to 1979, the FCC listed a table of 13 types of emission in the amateur rules. From the 1974 edition of *The Radio Amateur's License Manual*:

Types of emission referred to in the amateur rules
Type A0 — Steady, unmodulated pure carrier.
Type A1 — Telegraphy on pure continuous wave.
Type A2 — Amplitude tone-modulated telegraphy.
Type A3 — Amplitude-modulated telephony including single and double sideband, with full, reduced or suppressed carrier.
Type A4 — Facsimile.
Type A5 — Television.
Type F0 — Steady, unmodulated pure carrier.
Type F1 — Carrier-shift telegraphy (FSK, Frequency Shift Keying).
Type F2 — Audio frequency-shift telegraphy.
Type F3 — Frequency- or phase-modulated telephony.
Type F4 — F.M. facsimile.
Type F5 — F.M. television
Type P — Pulse emissions.

28. The 1979 World Administrative Radio Conference that revised many of the world's radio regulations, adopted a new, but very complex system of emission classification. The traditional A (Amplitude), F (Frequency), and P (Pulse) was intuitive, but limited and clumsy when dealing with new modes such as digital data and image. The world's radio bodies, including the FCC, gradually phased in the new system, based on a combination of necessary bandwidth and precise descriptions of emission classification.

29. Under the new system, each possible combination of emission classifications is defined as a separate distinct mode, even when it may have only minor differences from similar modes. For example, under the old designators, type A3 emission included conventional double-sideband AM, SSB suppressed carrier, SSB reduced carrier, SSB with full carrier. Under the new designators, each one of these variations is classified as a separate type of emission.

30. As a result of this new system, the number of emission designations used in the amateur service exploded, from 13 to 1296. This does not mean that amateurs were instantly granted authorization to use nearly 100 times the number of emission types as before; the number of modes in use by amateurs was tallied up to 1296 under the new system with no change in the actual number of modes authorized. The number of specific emission types was rounded up to 1300 for the sake of discussion, when the need for simplification became apparent, as Part 97 was later reorganized.

31. Part 97 (the amateur rules) was changed to a simplified system as described in §97.3(c), to consolidate the complex new emission, modulation and transmitting characteristics terminology into nine terms that are more familiar to amateurs:

(c) The following terms are used in this part to indicate emission types. Refer to §2.201 of the FCC Rules, Emission, modulation and transmission characteristics, for information on emission type designators.

*(1) **CW**. International Morse code telegraphy emissions having designators with A, C, H, J or R as the first symbol; 1 as the second symbol; A or B as the third symbol; and emissions J2A and J2B.*

*(2) **Data**. Telemetry, telecommand and computer communications emissions having (i) designators with A, C, D, F, G, H, J or R as the first symbol, 1 as the second symbol, and D as the third symbol; (ii) emission J2D; and (iii) emissions A1C, F1C, F2C, J2C, and J3C having an occupied bandwidth of 500 Hz or less when transmitted on an amateur service frequency below 30 MHz. Only a digital code of a type specifically authorized in this part may be transmitted.*

*(3) **Image**. Facsimile and television emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1, 2 or 3 as the second symbol; C or F as the third symbol; and emissions having B as the first symbol; 7, 8 or 9 as the second symbol; W as the third symbol.*

*(4) **MCW**. Tone-modulated international Morse code telegraphy emissions having designators with A, C, D, F, G, H or R as the first symbol; 2 as the second symbol; A or B as the third symbol.*

*(5) **Phone**. Speech and other sound emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1, 2, 3 or X as the second symbol; E as the third symbol. Also speech emissions having B or F as the first symbol; 7, 8 or 9 as the second symbol; E as the third symbol. MCW for the purpose of performing the station identification procedure, or for providing telegraphy practice interspersed with speech. Incidental tones for the purpose of selective calling or alerting or to control the level of a demodulated signal may also be considered phone.*

*(6) **Pulse**. Emissions having designators with K, L, M, P, Q, V or W as the first symbol; 0, 1, 2, 3, 7, 8, 9 or X as the second symbol; A, B, C, D, E, F, N, W or X as the third symbol.*

*(7) **RTTY**. Narrow-band direct-printing telegraphy emissions having designators with A, C, D, F, G, H, J or R as the first symbol; 1 as the second symbol; B as the third symbol; and emission J2B. Only a digital code of a type specifically authorized in this part may be transmitted.*

*(8) **SS**. Spread spectrum emissions using bandwidth-expansion modulation emissions having designators with A, C, D, F, G, H, J or R as the first symbol; X as the second symbol; X as the third symbol.*

*(9) **Test**. Emissions containing no information having the designators with N as the third symbol. Test does not include pulse emissions with no information or modulation unless pulse emissions are also authorized in the frequency band.*

[54 FR 25857, June 20, 1989]

32. The Commission used this change in emission type designation in its strategy of deception in the AM power proceeding, as an attempt to lessen the apparent significance of AM (A3E) by referring to this as "only one of 1300 emission types" as opposed to only "one in nine". Any poll of the amateur community would show universal puzzlement if licensees were asked to list 1300 emission types they are allowed to use. The purpose of this distortion of facts was obviously designed to leave the impression to non-technical Commission staff, FCC Commissioners, as well as elected officials contacted by constituents, that this was an insignificant matter.

(Exhibit 13) FCC EMISSION DESIGNATORS, Detailed List, Last Rev. 1998

FCC strategically denies 1990 Petitions Retain Historic AM Power

33. The FCC assigned RM-numbers to the three Petitions to retain the historic AM power level (Exhibits 9, 10, 11). They also pulled up the undated Prechtl Petition of years earlier requesting to phase out AM (Exhibit 8), which had been retained by the Commission with no action, and abruptly assigned this Petition an RM-number. These four petitions were then combined into a single proceeding to address issues with amateur radio A3E, while simultaneously downplaying the significance of this mode by continuing to insist that it is merely one of nearly 1300 emission types authorized for use by amateurs.

34. This commenter attended an amateur radio convention in Dayton Ohio, known as the Dayton Hamvention, circa April, 1990, and attended the FCC Forum presented by John Johnston, then chief of the amateur rulemaking division of the FCC's Private Radio Bureau. His topic that year was, that with the wide availability of new word processors, the amateur community was wasting the FCC's time by swamping them with an avalanche of frivolous rulemaking petitions. "You have been working your word processors overtime", he said. "Here's an example. On the one hand we have a Petition from a Mr Prechtl who wants us to phase out AM phone from amateur radio. And here, we have another Petition from the ARRL to *change the rules* to allow AM operators to run twice as much power as everybody else."

35. This appeared to be a deliberate strategy, combined with the deceptive "1300 emission types" claim, to distort the facts and imply that the Commission would be "even-handed" and deny all four of the "frivolous" Petitions relating to emission type A3E, leaving the rules unchanged and allowing the AM power reduction to stand. On 31 October, 1990 the FCC released its order denying all four of these Petitions **(Exhibit 14)**.

36. Two Petitions for Reconsideration **(Exhibit 15, Exhibit 16)** were filed, pointing out that the Petitions had been incorrectly characterized as requests to allow two to four times the power allowed other emissions, while the request clearly articulated in the Petitions was to seek continuation of the historic power levels for AM that had been in existence for over a half-century. The Petitions for Reconsideration also pointed out that the Commission had received over 800 comments in support of the historic AM power level, but that Commission staff were unwilling or incapable of dealing with the AM power issue in a fair manner, and turned a deaf ear to those comments.

37. No further FCC action was ever noted by this commenter on either of the Petitions for Reconsideration.

Conclusion

38. This nearly decade-long proceeding is a clear example of how the Commission should NOT handle a rulemaking issue. This has caused a substantial loss of respect for the Commission and its rules from many amateur licensees, some of which persists to this day. Now that most of the staff who handled these proceedings are probably long retired or separated from the FCC, it would be hoped that rulemaking decisions would be handled differently, in a more forthright manner today.

39. Since many of the licensees who were adversely affected by this proceeding and its rulings still actively participate in amateur radio, and some of the pre-1990 equipment is still in use, it is not too late for the Commission to take corrective action to restore the lost privileges. The issue is not as perplexing as the Commission attempted to claim in 1983-1992. For example, the change from input to output power could have been achieved with only a minor change in the wording of the rules as simple as the previously cited CB Rule 10 (47 CFR 95.410), to designate maximum carrier power for AM and a limit to peak envelope power for single-sideband. Since this was easily feasible for the CB service, there is no compelling reason why it would not be equally feasible for the amateur service.

40. Another possibility for achieving this result could be surmised by studying the Canadian amateur radio rules on transmitter power, which like FCC rules, contain standards based on output power:

Standards for the Operation of Radio Stations in the Amateur Radio Service RIC-2

10.2 Amateur Radio Operator Certificate with Basic and Advanced Qualifications

The holder of an Amateur Radio Operator Certificate with Basic and Advanced Qualifications is limited to a maximum transmitting power of:

(a) where expressed as direct-current input power, 1,000 W to the anode or collector circuit of the transmitter stage that supplies radio frequency energy to the antenna; or

(b) where expressed as radio frequency output power measured across an impedance-matched load,

(i) 2,250 W peak envelope power for transmitters that produce any type of single sideband emission, or

(ii) 750 W carrier power for transmitters that produce any other type of emission.

A similar rule would have been readily feasible, for the "perplexing" problem of power determination perceived by the FCC when the change from input to output power was first proposed in 1982, and would have avoided changing actual power levels anyone was using at the time, although the Canadian rule should probably be written to be more inclusive of the wide variety of modes used by amateurs to-day, and the Commission might not have accepted the Canadian 2,250-watt p.e.p. output level for SSB. However, a verbatim copy of this rule for the U.S. would not be advisable now, since the power limits for certain carrier-type modes like CW, RTTY and FM were doubled when the current rules were adopted. Going to a rule identical to the Canadians' would mean reverting to the previous power levels for those modes, thus taking away privileges that have been granted for the past 30-plus years by cutting maximum power levels in half, exactly as the FCC did with the AM power limit in 1990. This would undoubtedly raise strong objections from the CW community.

41. The least disruptive way to restore historic AM power without affecting other modes, would be to add one simple sentence, to allow either 3 kw p.e.p. or 750 watts carrier power when running **full**-carrier double-sideband AM. Note particularly the word "full". This is inserted to preclude use of a partially balanced modulator as a loophole to legally transmit a few hundred watts of carrier, while modulating at a power level far exceeding the prescribed limit. This technique was used by a small number of amateurs in the late 1950s and early 60s, and has been cited by the FCC as one of the events that convinced them that the old input power standard was no longer satisfactory. These

schemes generate a double-sideband *reduced* carrier signal, therefore citing a DSB AM standard that would be applicable only to *full*-carrier AM would preclude the use of that loophole.

42. This issue brings up a problem with technical regulations produced and regulated by the FCC and other government agencies, lack of oversight. The staff personnel who formulate regulations are usually the same people who are asked to review them whenever there is a request from the public for reconsideration. Judges and court personnel cannot be expected to possess the knowledge and expertise to rule on a wide range of highly technical issues of every description, so they routinely "defer to the expertise" of the regulatory commission, and the review falls back to the same people who formulated the rules in the first place. Personnel in charge of rulemaking bureaus are unlikely to rule against themselves, so the rules usually stand regardless of the merits of the case.

43. The same may be said of the FCC Commissioners, who are often political appointees who have little or no technical background in radio or other communications art; their expertise may be limited to communications law and other legal issues, so the full Commission generally follows the recommendations made by the rulemaking bureau that formulated the regulations in first place. It would probably take an Act of Congress to make changes to the Administrative Procedures Act, but there is nevertheless a need for some mechanism of review and oversight, so that the same people who initially write regulations do not have the final say before recommendations for adoption are submitted to what may be a non-technically oriented body Commissioners who approve them by default.

Other issues

42. The U.S. amateur service rules generally prescribe no specific enumerated bandwidth limitations for transmitted signals.

(§97.307) Emission standards.

(a) No amateur station transmission shall occupy more bandwidth than necessary for the information rate and emission type being transmitted, in accordance with good amateur practice.

The Commission is to be commended for historically keeping bandwidth limitations un-enumerated, based on good engineering and amateur practice, allowing amateur licensees the maximum flexibility for communication, technical experimentation, and self-instruction in the radio art. There have been in the past requests to replace sub-band regulation by emission type, with regulation by *bandwidth.*

43. The first proposal for this change was in FCC Docket 20777 of April 1976, which would have imposed strict limits to occupied bandwidths of amateur signals.. This change was rejected by the Commission and the proceeding terminated without making the change. Since then, there have been several recent requests to revisit the regulation-by-bandwidth issue, but so far this has failed to gain traction with the Commission, largely due to widespread opposition expressed in submitted comments.

44. The concept of regulation-by-bandwidth poses several problems for the amateur service particularly regarding digital modes of emission and the effect such rules changes would have on incumbent modes. These issues have never been completely resolved in the discussions, and the Commission has wisely avoided changing the rules in this direction.

45. If the Commission ever decides to incorporate any form of regulation-by-bandwidth into the rules, the current lack of enumerated limits should be preserved, by defining "bandwidth" not as limits to occupied bandwidth, but by using *necessary* bandwidths to designate certain emission types, allowing the regulation of occupied bandwidth to remain un-enumerated in terms of "good engineering and amateur practice".

Closing

This commenter wishes to thank the Technology Advisory Council (TAC) for extending to Commission licensees and users of licensed services the opportunity to offer suggestions for reforming technical regulations.

Respectfully submitted,

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24 October, 2017

Exhibit 1

Before the
Federal Communications Commission
Washington, D. C. 20554

PR
FCC 82-410
32071

In the Matter of	)	
	)	
Definition and Measurement of Transmitting Power in the Amateur Radio Service.	)	PR Docket No. 82-624

NOTICE OF PROPOSED RULE MAKING

Adopted: September 1, 1982; Released: October 1, 1982

By the Commission

Introduction

1. Notice of Proposed Rule Making in the above-captioned matter is hereby given.

2. The Commission is initiating this proceeding because the present rules governing maximum transmitting power 1/ in the Amateur Radio Service are archaic and unsuitable. 2/ They do not adequately apply to modern operating methods and place a variety of unnecessary burdens upon amateur radio operators. These rules are also difficult to enforce and require measurement techniques which can be hazardous to amateur operators and Commission enforcement personnel. Furthermore, the Commission has had to deal with a variety of substantive issues involving transmitting power in the past, and has consistently found the existing rules unsatisfactory for addressing such issues. Accordingly, it is evident that the time has come to resolve the vexing questions of transmitting power definition and measurement. It is also important to make clear that the intention of this proceeding is limited to improving the definition and measurement of transmitting power. We desire to avoid changing the actual power that amateur radio stations use.

1/ We are defining the term "transmitting power" to refer, generically, to different classifications of radio frequency (RF) power generated by, and defined for, operations of an amateur radio station. Within this broad term, we are defining "transmitter power" to describe the RF power produced by the transmitter itself and we are defining "effective radiated power" ("ERP") to describe the energy radiated by the station's antenna system.

2/ The subject rules are those entitled "Maximum authorized power" and are found in Section 97.67 of the Commission's Rules. Other rules affected include Section 97.61, "Authorized frequencies and emissions," and Section 2.106, "Table of Frequency Allocations."

Background

3. At one time, amateur radio transmissions consisted solely of on-off telegraphy (emission type A1, also referred to as "CW") and full carrier, amplitude modulated voice (emission type A3, also referred to as "AM DSB") emissions. For these emissions, the average final amplifier current of a transmitter remains fairly constant during measurement, permitting the input power to the amplifier to be determined with inexpensive galvanometers. 3/ Today however, the most widely used emission mode on the high frequency amateur radio bands is single sideband voice (emission type A3J, also referred to as "SSB"). When transmitting SSB voice emissions, the final amplifier current of a transmitter fluctuates with the modulating signal. The pointer of a meter, indicating this varying current, swings up and down the scale as the operator speaks and cannot be read with any reasonable degree of accuracy. Also, differences in the mechanical damping of conventional meters leads to differences in the apparent measurement. Thus, it is very difficult, if not impossible, to measure input power while transmitting SSB voice emissions. Transmitter power is equally, or even more difficult to measure for other modern and innovative modulation schemes used by amateur radio operators.

4. Despite the many advances in radio transmission techniques used by amateurs, many rules pertaining to these techniques have remained unchanged. For example, the present rules refer to obsolescent vacuum tube technology and have no clear meaning for the solid-state transmitters and amplifiers which are now commonly used in the Amateur Radio Service. For most of these amplifiers and some modern transmitters, a rather complex, and often hazardous procedure involving partial disassembly is necessary to measure input power. The present rules also burden many amateur radio operators with a requirement that they provide a means to accurately measure their transmitter input power. This rule was conceived to compel operators to be cognizant of their transmitter power at all times and thus avoid inadvertent use of unauthorized levels of power. However, with a variety of means other than "accurate measurement" available to operators to determine compliance with the power limitation rules, it is difficult to envision this rule serving a useful purpose.

5. The subject of amateur transmitter power limitations has been a part of two recent Commission rule making proceedings. In 1974 the Commission initiated a proceeding, in Docket 20282, that dealt comprehensively with operator classes, privileges and requirements. 4/ The Commission proposed, as part of that proceeding, to "... specify the maximum transmitter output in terms of peak envelope power (PEP) ..." in order to "... improve the technique specified in the Rules for determining power." Other techniques under

3/ This measurement technique involves using a voltmeter and a current meter to determine the average DC power supplied to the final amplifying circuit, other than that power which is not delivered to the plate circuit. Power for heating vacuum tube cathodes is not included.

4/ Notice of Proposed Rule Making, 29 FR 44042, December 20, 1974.

consideration for power measurements and regulatory requirements included PEP input, average power input, ratios of peak-to-average power output and limitations on dissipation ratings of final amplifier devices.

6. The comments filed in response to our proposal in Docket 20282 were mostly negative. Some expressed concern that amateur operators might be required to obtain relatively expensive (at that time) commercial quality, peak-reading instruments to measure PEP output. In the final Report and Order in that proceeding 5/, the Commission decided not to amend the transmitter power requirements at that time. However, the Commission stated:

> (W)e are still of the opinion that the state of present-day amateur communications warrants the use of better procedures to determine transmitter power than the "plate voltage times current" method. We intend to revisit this matter at a later time, and we encourage amateurs, in the interim, to develop and disseminate data which could be used as a basis for a workable and state-of-the-art measurement technique.

Since the time when comments were received in that proceeding, articles have appeared in amateur radio periodicals describing practical transmitter power output measuring techniques, and construction of power output measuring devices. Also, relatively inexpensive output power meters are now widely available commercially.

7. In 1980 the issue of amateur transmitter power was also addressed in the Commission proceeding dealing with revision of the Amateur Radio Service Rules into "Plain Language." 6/ The Commission proposed to specify the use of no more than 1000 watts or 2000 watts peak envelope power input to the final amplifier stage, depending on the emission type used. The Commission stated, "(R)ewriting the current requirements into plain language is not a straightforward task in itself. The current rules are so far out of date with modern design practice in the (Amateur Radio) Service, and with present FCC station inspection practices, more than rewording is called for." This proposal was considered "... a satisfactory interim step until such time as the matter of transmitter power can be more fully addressed." That particular proceeding has since been terminated without action. 7/

8. Finally, in an Order adopted January 27, 1982, addressing issues of power limitations for Morse telegraphy and Earth-Moon-Earth operations, the Commission stated that it found "... it difficult to address substantive issues involving transmitter power since present regulations are inadequate when applied to current operating methods and emission modes." The Commission

5/ Third Report and Order, 44 FR 16460, March 19, 1979.

6/ Notice of Proposed Rule Making in PR Docket 80-729, 45 FR 83592, December 19, 1980.

7/ Order in PR Docket 80-729, 46 FR 60033, December 8, 1981.

concluded by once again calling on the "... amateur community to develop ... data which could be used as the basis for a workable ... power measurement technique and as the basis for Commission rule makings in this area."

Proposal

9. The Commission can find no salient reason to continue to specify transmitter power limits in terms other than output power. As noted earlier, equipment disassembly and meter attachments necessary to accurately measure input power present hazards to amateur operators and Commission enforcement personnel. Input power measurements can also be complex or ambiguous for certain amplifying devices and amplifier configurations. These complexities can be especially confusing to less experienced operators. And ultimately, due to differences in amplifier efficiencies, power input limitations are not properly related to the intent behind the power limitations specified in the rules; only output power is germane to interference potential.

10. Consideration was given to a variety of other methods for controlling transmitter power. For example, we considered limiting final amplifier devices to those with certain maximum dissipation ratings. However, such a rule would suffer from having to rely on poorly standardized or ambiguous rating methods. Such a rule would also be unenforceable due to the large amount of equipment currently available, and in use, which exceeds any appropriate dissipation limit. Other means considered for regulating transmitter power are inadequate for the same or similar reasons. Furthermore, there appears to be no means to define and measure transmitter power, other than by output, which can be adequately applied by Commission enforcement personnel. Accordingly, the Commission is proposing to define and measure amateur transmitter power in terms of output.

11. Defining transmitter power in terms of output has a number of advantages for amateur operators. A practical constraint which radio operations have always had to face is that for most amplifying devices, the efficiency of the device (power output as compared to power input) decreases as the operating frequency increases. By defining power in terms of output amateur operators interested in operating at higher frequencies, particularly in the VHF, UHF and higher frequency bands, would no longer be constrained by amplifier efficiency. Furthermore, operators would no longer have cause to "push" amplifiers to the margins of their capability; a poor engineering practice which often leads to undesirable spurious and harmonic emissions. Amateur operators would be able to transmit at the same maximum power across all bands while using good engineering practice.

12. The Commission is further proposing to specify the power output measurement in terms of peak envelope power. The only reasonable alternative to specifying PEP would be to specify mean power. However, mean power measurements, like the present "average DC input" measurement, have little meaning when applied to SSB and certain other emissions. In addition, as amateur operators continue to pursue such technological developments as digital communications, mean power measurements may become even less

applicable. PEP measurements, on the other hand, can be unambiguously applied to virtually all emission types and can also be easily computed from carrier power for many popular emission modes. 8/

13. In arriving at a figure to specify as the authorized maximum limit for transmitter PEP output, the Commission has endeavored to avoid any significant change in the power actually authorized to amateurs currently. However, since the current rules, in effect, authorize different maximum PEP outputs for amateur transmitters, depending on the emission type used, finding a single, suitable number for the maximum limit is no easy task. 9/ We have considered establishing different PEP output limitations for different emission modes in order to avoid any significant change in actual present operating power. This would entail classifying each amateur emission mode into a group, with each group having a distinct power limitation figure. Taking this approach, we believe, would lead to complexity and confusion in the rules, and inhibit the opportunities for operators to use emission modes not easily classified (controlled carrier AM emissions for example). Consequently, we find that this approach is not acceptable.

14. Since we are committed to setting forth power limitation figures which are simple (that is, void of unnecessary exceptions) and unambiguous (that is, easily applied to various emission modes without any question as to whether the mode falls into some excepted category), we believe that ideally there should be only one figure specified for amateur transmitter power (with the exception of the power limits for Novice class operators and others operating in the "Novice subbands"). Again, arriving at a single power-limit figure is a difficult task. We have considered authorizing a maximum of 1000 watts PEP output for amateur transmitters. This is a number which amateur operators are accustomed to associating with transmitter power limitations and which effects the least average change in actual maximum operating power for most common emissions. This specification would result in an approximate 1 decibel (dB) increase in the maximum power authorized for FM and CW (A1) emission modes. However, this specification would result in some loss in the maximum power authorized for most other AM emission modes.

15. Limitations on AM DSB emissions would be changed significantly and this issue is addressed separately in paragraph 17 below. Limitations on SSB emissions would be more restrictive by approximately 1 dB. While the Commission finds it difficult to consider this change significant in terms of actual communications capability, we recognize that, considering the equipment

8/ For example, PEP is the same as carrier power for frequency modulation (FM) and CW (A1) emissions. For AM DSB (A3) emissions, modulated 100 percent, the PEP is approximately four times the carrier power.

9/ For example, transmitters operating at the current maximum authorized power of 1000 watts input to the final amplifier stage can develop approximately 750 watts of PEP output for FM and CW emission modes, but can develop approximately 1300 watts of PEP output for SSB emissions and approximately 3000 watts for AM DSB emissions.

that amateur operators may already own, some operators may consider a 1 dB decrease in the maximum authorized power to be significant. Consequently, a 1000 watt specification may not be well accepted for all amateur operations.

16. The Commission, therefore, proposes to authorize 1500 watts as the maximum PEP output of an amateur station transmitter. This specification would result in no decrease in the actual authorized power for the popular emission modes. CW and FM emission mode operations would realize an approximate 3 dB increase in actual authorized power. Transmitter power in the frequency bands 3700-3750 kHz, 7100-7150 kHz (7050-7075 kHz when not within Region 2), 21,100-21,200 kHz and 28,100-28,200 kHz (the "Novice subbands") would be limited to 200 watts PEP output. The power limitations for protection of LORAN-A, in the band 1900-2000 kHz, would be converted from DC input power to peak envelope power output. Transmitter power in the 420-450 MHz band would be limited to 50 watts peak envelope power output when operating in the protected military zones (except as authorized by Sections 97.421 and 97.422 of the Rules for satellite operations). We invite comments as to the appropriateness of the maximum limits we have selected, considering our commitment to specifying a single figure for maximum authorized power (excepting the "Novice subband," LORAN-A and military zone restrictions).

17. Amateur operations utilizing AM DSB would be significantly affected by our proposal to specify transmitter power in terms of a single PEP limit. These operations, when subjected to our maximum 1500 watt PEP specification, would be limited to approximately half of their current maximum operating power. And while this power reduction might be appropriate for an emission type which, by today's standards, is spectrum inefficient, the Commission recognizes that there is still some interest in this mode. Consequently, we propose to "grandfather" such operations of those amateurs who currently use AM DSB. They would be allowed to continue to use the transmitter power definitions, measurements and limitations currently specified in the Rules for a period of five years when using that mode. After that time, transmitter power for AM DSB emissions would be defined, measured and limited the same as for all other emissions. We specifically invite comments as to whether a five year period is an appropriate length of time for the "grandfather" term.

18. The Commission further proposes to delete the requirements of Section 97.67, paragraph (a) of the Rules which requires amateur operators, under some circumstances, to provide a means for accurately measuring transmitter power. 10/ The Commission believes that each operator should determine individually the best means for ensuring compliance with the power limitations. Removing this regulation would relieve amateur operators of the

10/ Section 97.67, paragraph (a) of the Commission's Rules states, in part, that, "An amateur transmitter operating with a power input exceeding 900 watts to the plate circuit shall provide means for accurately measuring the plate power input to the vacuum tube or tubes supplying power to the antenna."

burden to have specific equipment on hand. In place of this current rule, we propose to include a description of the method which the Commission will use to determine transmitting power. In this way, operators will be fully aware of the methods used by us to determine compliance. We wish to stress that we have no intention of requiring operators to purchase any equipment for making transmitting power measurements.

19. Our proposals also include a revised definition of effective radiated power (ERP). The current definition 11/ is ambiguous in that it does not specify whether the power delivered to the antenna should be measured in terms of mean power, carrier power, peak envelope power, or in accordance with some other measurement specification. The definition we are proposing would be based on the transmitter power delivered to the antenna. Since transmitter power would be defined earlier in the Rules in terms of PEP, ERP would also be based on a peak envelope measurement.

20. We believe that while eliminating an ambiguity, our proposed definition of ERP would have no impact on most practical amateur operations. The ERP limitations only apply to stations in repeater operation and virtually all such operations use frequency modulation (FM). Since PEP, mean power and carrier power are the same for FM emissions, FM repeater operations could continue to use the same power levels regardless of how operators may have measured power previously. We are aware, however, that some repeater operations exist which use amplitude modulation (AM) and which may be adversely affected by our proposed ERP definition. But since there are only a handful of AM repeater operations, we believe that any adversely affected operations could be relieved from power reduction, if necessary, by a Special Temporary Authorization (STA).

21. The Commission specifically invites comments on the following issues which we have not sufficiently resolved to make specific proposals. The first is that of an acceptable standard for audio input level to be used during those power measurements that would require a source of modulation. For example, with an SSB transmitter the power output varies according to the level of audio fed into it from a microphone or some other source. Therefore, in order to get an appropriate value for transmitter power during a station inspection it would be necessary for Commission engineers to simulate the normal audio input. This would, however, be an impossible task since it would be necessary to emulate an infinite number of human voices or other forms of modulating signals. Consequently, we believe that a more reproducible standard is required. One possibility would be to use a two-tone audio generator as the modulating signal, with the generator output level set just below that which causes overload distortion in the emitted radio frequency waveform. Another possibility would be to use an audio input signal level which produces the same field strength readings as those detected by Commission engineers during monitoring which may have taken place prior to the

11/ Section 97.3 paragraph (t) of the Rules currently defines effective radiated power as, "The product of the radio frequency power, expressed in watts, delivered to an antenna, and the relative gain of the antenna over that of a half-wave dipole antenna."

station inspection. Comments on these possibilities, or recommendations for other schemes, would be welcomed since it would be desirable to specify in the rules the actual methods which may be used by Commission enforcement personnel.

22. We also invite comments on the question of impedance matching of measuring equipment to amateur transmitters during a station inspection. Ideally, there would be a standard impedance which could be used to simplify power measurements for operators as well as Commission personnel. Nonetheless, we are prepared to accept the burden ourselves of matching Commission measuring equipment to individual transmitters in order to obtain accurate measurements. However, we welcome any suggestions which might mitigate this problem for station inspections.

23. Finally, we invite comments as to whether some exception to the PEP output definition should be made for pulse transmissions (type P emissions). Since pulse width may be narrow and pulse repetition infrequent for many pulse transmissions, it may be appropriate to factor these parameters into power limitations applied to this emission mode.

Conclusion

24. The Commission recognizes that the issue of transmitting power limitations is an emotional one for many amateurs. However, it is plain that the current definitions and measurement techniques are inadequate and we must take action. We cannot stress enough our commitment to be fair to the interests of all amateur operators. In the past, the Commission has found the comments of the amateur community quite helpful in its rule making proceedings. We anticipate that, in this proceeding, amateur operators will recognize the many benefits that our proposals offer to them and provide constructive comments to aid us in our final decision on this matter.

25. Accordingly, NOTICE IS HEREBY GIVEN that it is proposed to amend 47 CFR Parts 2 and 97 in accordance with the proposal set forth in the attached Appendix.

Procedural Matters

26. Authority for issuance of this Notice is contained in Sections 4(i) and 303(r) of the Communications Act of 1934, as amended, 47 USC 154(i) and 303(r). Pursuant to applicable procedures set forth in Section 1.415 of the Commission's Rules, interested persons may file comments on or before February 1, 1983, and reply comments on or before March 1, 1983. All relevant and timely comments will be considered by the Commission before final action is taken in this proceeding. In reaching its decision, the Commission may take into consideration information and ideas not contained in the comments, provided that such information or a writing indicating the nature and source of such information is placed in the public file, and provided that the fact of the Commission's reliance on such information is noted in the Report and Order.

27. In accordance with Section 1.419 of the Commission's Rules, 47 CFR 1.419, formal participants must file an original and five copies of their comments and other materials. Participants who wish each Commissioner to have a personal copy of their comments should file an original and eleven copies. Members of the general public who wish to express their interest by participating informally may do so by submitting one copy. All comments are given the same consideration, regardless of the number of copies submitted. Each set of comments must state on its face the proceeding to which it relates (PR Docket Number) and should be submitted to: The Secretary, Federal Communications Commission, Washington, DC 20554. All documents will be available for public inspection during regular business hours in the Commission's Public Reference Room at its headquarters in Washington, D.C.

28. For purposes of this non-restricted notice and comment rule making proceeding, members of the public are advised that ex parte contacts are permitted from the time the Commission adopts a Notice of Proposed Rule Making until the time a public notice is issued stating that a substantive disposition of the matter is to be considered at a forthcoming meeting or until a final Order disposing of the matter is adopted by the Commission, whichever is earlier. In general, an ex parte presentation is any written or oral communication (other than formal written comments/pleadings and formal oral arguments) between a person outside the Commission and a Commissioner or a member of the Commission's staff which addresses the merits of the proceeding. Any person who submits a written ex parte presentation must serve a copy of that presentation on the Commission's Secretary for inclusion in the public file. Any person who makes an oral ex parte presentation addressing matters not fully covered in any previously-filed written comments for the proceeding must prepare a written summary of that presentation; on the day of oral presentation, that written summary must be served on the Commission's Secretary for inclusion in the public file, with a copy to the Commission official receiving the oral presentation. Each ex parte presentation described above must state on its face that the Secretary has been served, and must also state by docket number the proceeding to which it relates. See generally, Section 1.1231 of the Commission's rules, 47 CFR 1.1231. A summary of the Commission's procedures governing ex parte contacts in informal rule makings is available from the Commission's Consumer Assistance Office, FCC Washington, DC 20554, (202) 632-7000.

29. The Commission has determined that Sections 603 and 604 of the Regulatory Flexibility Act of 1980 (Public Law 96-354) do not apply to this rule making proceeding since this proposal would simply redefine certain technical terms in the Rules and specify the procedures used by the Commission in determining compliance with those rules. All substantive proposals are either insignificant in effect or deregulatory. No new equipment would be required to be purchased by amateur radio operators. Consequently, there would be no economic impact on small businesses, small organizations or small governmental jurisdictions.

30. IT IS ORDERED that the Secretary shall cause a copy of this Notice to be served upon the Chief Counsel for Advocacy of the Small Business Administration and that the Secretary shall also cause a copy of this Notice to be published in the Federal Register.

31. For further information on this proceeding, contact Steve Lett, Federal Communications Commission, Private Radio Bureau, Washington, DC 20554, (202) 632-4964.

FEDERAL COMMUNICATIONS COMMISSION

William J. Tricarico
Secretary

Exhibit 2

Before the
Federal Communications Commission
Washington, D.C. 20554

FCC 83-345
33549

In the Matter of

Definition and Measurement of Transmitting Power in the Amateur Radio Service.

PR Docket No. 82-624

REPORT AND ORDER
(Proceeding Terminated)

Adopted: July 18, 1983 ; Released: July 22, 1983

By the Commission:

1. On September 1, 1982, the Commission adopted a Notice of Proposed Rule Making in the above-captioned matter. 1/ That Notice was in response to the Commission's concern that "... the present rules governing maximum transmitting power in the Amateur Radio Service are archaic and unsuitable." The Commission stated:

> They do not adequately apply to modern operating methods and place a variety of unnecessary burdens upon amateur radio operators. These rules are also difficult to enforce and require measurement techniques which can be hazardous to amateur operators and Commission enforcement personnel. Furthermore, the Commission has had to deal with a variety of substantive issues involving transmitting power in the past, and has consistently found the existing rules unsatisfactory for addressing such issues.

The Commission, therefore, proposed to change the rules governing the manner in which transmitting power is defined and measured for amateur radio stations.

2. In its Notice of Proposed Rule Making, the Commission specifically proposed to measure the operating power of amateur radio stations in terms of peak envelope power (PEP) output with a maximum of 1500 watts generally authorized. Stations operating in the frequency bands 3700-3750 kHz, 7100-7150 kHz (7050-7075 kHz when not in Region 2), 21,100-21,200 kHz and 28,100-28,200 kHz (the "Novice subbands"), under the proposal, would be limited to 200 watts PEP and the power limitations for the protection of the LORAN-A radiolocation system in the band 1900-2000 kHz would be converted from DC input power to PEP output. It was also proposed to limit transmitter power in the 420-450 MHz band in the protected military zones to 50 watts PEP. A five-year "grandfather" period was proposed for operations using full carrier, amplitude modulated voice (emission type A3, also referred to as "AM DSB") emissions since, under the proposal, these operations would be limited to approximately half of their currently authorized maximum power. The

1/ 47 FR 49424 (November 1, 1982).

Commission further proposed to delete the requirements for operators to provide a means for accurately measuring transmitter power and instead allow them to determine individually the best means for ensuring compliance with the power limitations. Finally, in order to clarify its requirements, the Commission proposed to set forth specific new definitions in the Rules for transmitting power and to specify the manner in which power measurements would be made by Commission enforcement personnel.

3. Several hundred comments were filed in response to the Notice. By and large, the majority of the comments not addressing the effect of the proposal on AM DSB operations supported the proposal. Typical of these comments are those of Joseph Reisert. He stated:

> (T)he Amateur Radio Service is one of the few services using the input power measurement. Measuring input power can be deceptive and counter productive for several reasons. The plate and voltage meters used by amateurs are frequently not very accurate.... Also, these meters can be a safety hazard since they usually carry high voltages.... Many new schemes of modulation are now in use which are not adequately measured in terms of input power (e.g. single sideband suppressed carrier, Class "E" amplifiers, etc.). Also many new forms of amplifier circuitry (e.g. grounded grid, solid state, etc.) make the use of input power measurements inaccurate since some of the power is passed on by the amplifier without being adequately measureable in terms of actual DC input power. Since Docket 20282 was finalized, many new types of power output meters have become available to the amateur that are accurate as well as reasonable in price.

The American Radio Relay League (ARRL), 2/ in its comments, stated: "The benefits of measurement in terms of output power are significant. It is especially noteworthy that amateurs interested in VHF and UHF 3/ communications would no longer be constrained by amplifier efficiency."

4. Nonetheless, a significant concern was expressed in the comments regarding the manner in which amateur operators would be required to measure their transmitting power. Typical of these were the comments of Robert Sherwood. He stated: "Commercial broadcasters, who are licensed for power output may use the indirect method of measurement if they can show that their calibration equipment is not accurate enough or available to them to make the required output measurement. There is no reason the Amateur should be burdened to a greater extent than the commercial broadcaster." Although the Commission was careful to point out in its Notice that no power measurement would be required, we will take this opportunity to reiterate our position on this matter. We are not going to require amateur operators to have specific equipment on hand to make any power measurements. We will only require that operators comply with the rules regarding the power actually used.

2/ The American Radio Relay League, Inc. is an association of amateur radio operators with over 100,000 members who are licensed by the Commission.

3/ The VHF (Very High Frequency) and UHF (Ultra High Frequency) bands are those between 30 and 3000 MHz.

5. When applied to single sideband and other types of emissions the present system of power measurement (measuring input power) is at best an approximation. Measurement of output power is far more accurate. However, even output power may be measured by different methods yielding varying results. Thus, we need to choose a measurement standard for output power that both the amateurs and the Commission recognize as valid. By this order we are choosing and publicizing such a standard. It is:

The output power will be determined while the station is operating as indicated by:

1) the reading of a thru-line peak reading radiofrequency (RF) wattmeter, properly matched, or

2) calculation of the power using peak RF voltage as indicated by an oscilliscope or other peak reading device.

Should we decide upon other standards in the future, we will release them in public notices.

6. By far, the most significant concern expressed in the comments was the effect that the proposal would have on AM DSB operations. Typically, these operations would be limited to half of the maximum operating power that is currently used. Most of the comments insisted that the proposed five-year grandfather period was inadequate. Typical of these were the comments of the ARRL which stated: "This effort by the Commission to lessen the negative impact that its proposal would have on these amateurs (using AM DSB) is appreciated by the League. Nevertheless, the Commission should go one step further and make this grandfathering provision permanent." The Commission remains sympathetic to the effect the proposed rule change will have on these operations. However, we still cannot justify a permanent and continuous expense in terms of equipment and training that would be necessary for us to be prepared to make a special power measurement for this class of operations. This is particularly true in light of the fact that, in the worst case, the actual power reduction (a reduction of 3 dB) would generally be insignificant in terms of actual communications effectiveness and, futhermore, given the fact that only approximately one percent of the licensed amateur operators use this mode. We, therefore, have decided to limit the grandfather provisions to a period ending June 1, 1990. If it appears there is any justification to do so, we will reconsider the matter at that time.

7. There were few comments regarding special power measurements to be made for pulse emissions. However, those that addressed this area stated that pulse frequency and width should be considered in power measurements for these emissions even though they observed that virtually no use is made of this mode currently. The ARRL was among the commenters suggesting a special power measurement technique but their comments also noted that "... pulse emission in the Amateur Service has been rare to date." We have considered this matter and decided that, as with AM DSB emissions, it would not be practical to make a special exception at this time. We may revisit this matter if it appears that this emission mode is becoming more popular in the future or that this limit is hampering serious experimental or communications activities.

8. Finally, several comments suggested that the maximum authorized operating power should be lowered substantially for all modes of operation. We will not address this issue in the context of this proceeding, but it is pertinent to make an observation regarding the tenor of the comments. Most of the comments we received dwelt on the effect that changes in maximum operating power would have on particular operations. We must emphasize that maximum operating power is not the primary governing rule for amateur transmitting power. Amateur operators are required by statute 4/ to use the minimum power necessary to carry out the desired communications. As the ARRL stated in its comments: "It is important to emphasize that amateur operation at any maximum power level is unlawful unless it is the minimum transmitting power necessary to carry out the desired communications. The League is most supportive of the emphasis on this rule exhibited in the Notice by utilizing it at the outset in the proposed Section 97.67."

9. Accordingly, IT IS ORDERED that effective August 29, 1983, Part 97 of the Commission's Rules and Regulations, 47 CFR Part 97, IS AMENDED as set forth in the attached Appendix. IT IS FURTHER ORDERED that this proceeding IS TERMINATED. This action is taken pursuant to authority contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended. Further information on this matter may be obtained by contacting: John Borkowski, (202) 632-4964, Private Radio Bureau, Federal Communications Commission, Washington, DC 20554.

FEDERAL COMMUNICATIONS COMMISSION

William J. Tricarico
Secretary

Attachment: Appendix

4/ See 47 U.S.C. §324.

THE AMERICAN RADIO RELA
INCORPORATED

Exhibit 3

LIFE MEMBER'S CORRESPONDENCE

QST
OFFICIAL ORGAN

WA5TWF . F.A. Dunlap .
14113 Stoneshire
Houston,Texas
77060
U.S.A.

W A C
R C C
W A S
D X C C
S P A M (President)

August 15,1983

To: FCC Washington,D.C. In The Matter Of: Docket 82-624, Final Action (& FCC Report&Order of July 18, 1983) Specific-(-ally(new) 97.67 (f))

PETITION FOR IMMEDIATE RECONSIDERATION

On behalf of the Nationwide membership of the Society For Promotion of Amplitude Modulation(A Quality Communications Medium) I am respectfully filing this PETITION FOR IMMEDIATE RECONSIDERATION of FCC Action (new) 97.67 (f) as it pertains to Full Carrier Double Sideband Emission by Amateur Radio Operators (A-M) . Our reasons:

1. The use of A-M is increasing daily. The"continuous stream " of correspondence in this Office indicates a resurgence in interest - more A-M on the air , and , thanks to modern technology more gear A-M capable is being introduced by the major Amateur Radio equipment mfgrs. This "delayed" reduction in Power can only be interpreted by the "average ham " as the FCC's desire to "phase out" A-M altogether, eventually . This amounts to "Psychological Warfare" against the growth of the mode (albeit unintentional on the FCC's part) .

2. Discrimination . The A-M community recognizes and accepts the Absolute Power of the FCC in the area of Amateur Radio Regulation. We are admittedly a Minority of the Amateur Radio Population.In American Society, as a Whole, for a Minority Group to be "singled out" for "special punishment" only for the conveniance of a Government Agency is in Violation of more Federal Law than I have space to cite. And, would be grounds for Class Action Litigation.

3. This Action is Arbitrary and Violates the FCC's own stated policy . This "grandfather clause" was not the result of ANY request or petition of any Amateur Organization or individual, but is entirely for the conveniance of the Commission, "a pendulum of sharpness to hang over the A-M community until 1990" when, even further cuts could be made.

4. Your reason for taking this action makes no sense to us. In your Report and Order , item 6 . your reasons for doing this are :

" ...we still cannot justify a permanent and continuous expense in terms of equipment and training that would be necessary for us to be prepared to make a special Power measurement for this class of operations."

There is no need for you to do that. Simply define the power limit for A-M as 3.8 KW PEP Output . Rewrite 97.67 (f) .

Respectfully submitted,

F.A. Dunlap(WA5TWF)(President

Society for Promotion Amplitude Modulation

(A Quality Communications Medium)

Exhibit 4

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Definition and Measurement of Transmitting Power in the Amateur Radio Service.	)	PR Docket No. 82-624

PETITION FOR RECONSIDERATION.

By Donald B. Chester, K4KYV (Amateur Extra Class), Route 1 Box 281, Woodlawn, TN 37191

Date: 8 August, 1983

I.

The Report and Order for PR Docket 82-624 conflicts with General Docket 83-114, which was released after the comment period for PR Docket 82-624 had expired. This latter proceeding consists primarily of a Notice of Inquiry in which the Commission has initiated a re-examination of all its technical rules and regulations, specifically including §97.67, Maximum authorized power. Thus, events directly concerning PR Docket 82-624 have occurred and circumstances have changed since the last opportunity to present them to the Commission. General Docket 83-114 is a broad discussion of the Commission's technical regulations involving all the various radio services; logically such a comprehensive proceeding would pre-empt pending dockets limited in scope such as PR Docket 82-624. By revising rules specifically under re-examination, in the middle of the proceeding even before the comment period for the latter proceeding has ended, the Commission thwarts its own effort to develop a coherent policy on technical regulation of the various radio services and implement changes in the rules based on that policy. At best the Commission is indulging in needless duplication of effort; it is even possible that the revisions adopted in the Report and Order of PR Docket 82-624 may ultimately be inconsistent with whatever overall

regulatory policy emerges from General Docket 83-114, and the amateur radio power limit have to be addressed once again, in yet another Notice of Proposed Rulemaking.

II.

The Commission was not altogether diligent in exploring every possible avenue in which the stated goals of this proceeding could be realized without taking away any of the operating privileges presently enjoyed by amateur licensees, i.e. reducing the DSB AM power limit after the expiration of the grandfather period. The Commission claims it cannot justify a "permanent and continuous expense in terms of equipment and training (necessary) to make a special power measurement for this class of operations." This might have been a credible statement if the amateur service alone used this mode of emission. However, with literally thousands of AM broadcast stations scattered throughout the country, licensed by the Commission to run from 250 watts to 50,000 watts using the DSB AM mode, it is difficult to believe that the Commission would ever lack the necessary equipment and/or qualified personnel to measure the power levels of transmitters operating DSB AM.

In effect, this Report and Order states that amateurs using DSB AM are to lose significant privileges because, in the unlikely event that their stations would be inspected by the Commission, the Commission's inspection team might not know how to make the appropriate power measurements. (The amateur station operator would most probably be glad to show the Commission personnel how this is done.) After all, the Commission exists to serve its licensees and the public, not vice versa. It is unconscionable to impose a significant loss of existing privileges upon amateur licensees solely because someone has

decided that those privileges are inconvenient for the Commission to administer.

The Commission's reasoning behind this power reduction is rendered even less credible by the fact that the existing DSB AM power limit (under the grandfather provision) could easily be expressed in terms of the Commission's chosen standard, peak envelope output power. Under the existing rules, using high level modulation techniques, the legal maximum 1000 watts DC input to the final amplifier is equivalent to 4000 watts peak envelope power input at 100 percent modulation. In the AM Broadcast Service, operators are permitted up to 125 percent positive peak modulation. There is no reason why the amateur should be restricted to a greater extent than the commercial broadcaster. At a maximum 125 percent positive peak modulation, the peak envelope power input would be approximately 5000 watts. Even the most efficient high level modulated transmitter would not likely deliver more than 4000 watts peak envelope power to the antenna, making this figure an acceptable standard for DSB AM operation. A 4000 watt p.e.p. output limit for this mode would represent at most a fraction of a decibel power increase. Under the Report and Order other modes enjoy considerably greater power increases, in some cases as much as 3 decibels. The 4000 watt figure is a round, even number, easy to remember, and would be appropriate for permanent inclusion in the rules.

CONCLUSION

I, the undersigned, do hereby respectfully urge the Commission to consider the following specific alternatives to the present Report and Order: (1) That the Report and Order be rescended and this entire proceeding be suspended until after the disposition of General Docket 83-114, and/or (2) that Sec. 97.67, paragraph (e) be revised to read as

follows:

"Notwithstanding the limitations in paragraph (b) of this section, an amateur radio station may transmit full-carrier A-3 emissions with a peak envelope output power not exceeding 4000 watts. Limitations of paragraphs (a), (c) and (d) of this section and limitations of § 97.61 still apply."

Donald B. Chester

8 August, 1983

Exhibit 5

Before the
Federal Communications Commission
Washington, D. C. 20554

PR
FCC 84-413
34817

In the Matter of)
)
Definition and Measurement of) PR Docket No. 82-624
Transmitting Power in the)
Amateur Radio Service.)

Memorandum Opinion and Order

Adopted: September 5, 1984 Released: September 10, 1984

By the Commission:

1. On July 22, 1983 the Commission adopted a Report and Order, 48 FR 34746 (August 1, 1983) in this proceeding replacing the former input power measurement standard in the Amateur Radio Service with a power measurement standard based upon peak envelope power output. This Report and Order was later modified by two Errata, 48 FR 37224 (August 17, 1983) and 48 FR 44814 (September 30, 1983).

2. The Society for Promotion of Amplitude Modulation (Society), Kevin Alfred Strom (Strom) and Donald B. Chester (Chester) filed Petitions for Reconsideration. 1/ The American Radio Relay League (ARRL) filed a Motion for Clarification. Arthur E. Provan (Provan) and Byron H. Kretzman (Kretzman) filed reply comments in support of Chester's comments.

1/ Strom included a request for public hearing in his Petition for Reconsideration. Participants in rule making proceedings are not entitled to a public evidentiary hearing or to oral presentation. Amateur Licensing and Call Sign Simplification, 71 FCC 2d 559 (April 27, 1979). Strom has made no showing that his or others' opportunity to submit data and statements to the Commission was inadequate. We therefore deny Strom's request for public hearing. See Chemical Leaman Tank Lines, Inc. v U.S., 368 F.Supp. 925 (D.Del. 1973). See also Chip Steak Co. v Hardin, 332 F.Supp. 1084 (N.D.Cal. 1971), aff'd 467 F.2d 481, cert. den. 411 U.S. 916.

3. The ARRL, in its Motion for Clarification, addressed the language in paragraph five of the Report and Order. In this paragraph we set forth the methods we intend to employ in determining the output power of an amateur radio station. We also stated: "Should we decide upon other standards in the future, we will release them in public notices." The ARRL sought clarification on whether this statement was meant to include the actual output power limitation, the methods used for measurement of output power, or both. Further, the ARRL maintained that in either case public notice would be inappropriate, and that such changes require notice and comment rule making proceedings as described in Section 553 of the Administrative Procedure Act (5 U.S.C. §553).

4. The last sentence of paragraph five of the Report and Order, regarding release of future standards by public notice, dealt only with the procedures used for measurement of output power. This sentence was not meant to include the actual output power limitation. We anticipate that any revision of the 1500 watt peak envelope power output limit in Section 97.67(b) of the Rules would be the subject of a notice and comment rule making proceeding. 2/

5. We do not view announcement of changes in measurement methods as within the purview of 5 U.S.C. §553. These methods merely reflect Field Operations Bureau practice for measuring power. Because improved testing equipment and techniques may become available, there may be a need to change these power measurement methods at some time in the future. Should the Field Operations Bureau change its method of measuring amateur radio transmitting power, we intend to inform the public of this change in method by public notice. This matter is a general statement of procedure not subject to the provisions of the Administrative Procedure Act. See 5 U.S.C. §553(a)(3)(A).

6. Chester, Provan and Kretzman all expressed the view that the instant proceeding is inconsistent with General Docket No. 83-114. We disagree. General Docket No. 83-114 is both a Notice of Inquiry and a Notice of Proposed Rule Making. Notice of Inquiry and Proposed Rule Making, General Docket No. 83-114, 48 Fed. Reg. 14299 (April 4, 1983). The rule changes at issue in that Notice of Proposed Rule Making are limited to Parts 15 and 73 of our Rules. The Notice of Inquiry in that proceeding is a broad discussion of possible rationales for reducing the Commission's technical regulations and adopting alternative approaches. The instant proceeding is not mutually exclusive with nor a predetermination of the outcome of the inquiry in General Docket No. 83-114. If, in that proceeding, we determine that deregulatory alternatives in the areas of interoperability, efficiency or interference should be adopted, we will then see whether they have particular applicability to rules in the Amateur Radio Service.

2/ A cross-reference in Section 97.67(b) was inadvertently changed. We will correct paragraph (b) to clarify that the peak power output standard is subject to certain limitations and exceptions in Sections 97.61 and 97.67 of the Commission's rules.

7. Further, the inquiry proceeding does not address the question of whether input power or output power measurements are more appropriate in the Amateur Radio Service. 3/ Rather, it addresses the overall question of whether rules limiting power are necessary to control interference. We have a power limitation in the Amateur Radio Service and therefore the questions of whether that limitation should be upon input or output power and of how to properly measure the power were properly reached in this docket.

8. Each of the filings requesting reconsideration other than the ARRL's deal with the impact of this proceeding upon AM DSB operations in the Amateur Radio Service. In the Report and Order we recognized that this docket would have an impact on AM DSB operations. We estimated that use of output power measurement standards would typically limit AM DSB operations to half of their previous maximum allowable operating power. We stated that in the worst case this would result in an actual power reduction of 3dB, which should be insignificant in terms of actual communications effectiveness. We concluded that we could not justify a permanent and continuous expense, both for equipment and training, to make a special power measurement for amateurs who happen to engage in AM DSB operations, particularly where they constitute only approximately one percent of the U.S. amateur population.

9. Strom commented that variations in amplifier efficiency for AM DSB operations may cause variations in average output for a given input power, but that these variations are within a calculable range of efficiences. This is true, but we estimate the variation range in average output power calculated on the basis of input power for AM DSB operations in the Amateur Radio Service to be between 45% and 90%. AM DSB operation is in fact a primary example of the inapplicability of input power measurement to certain operating methods. This issue illustrates the extent to which input power standards were archaic. Moreover, the input power measurement standard failed to indicate radiated power or interference potential.

10. The only new facts or analysis presented by Chester and Strom are allegations of quantifiable peak envelope power measurements (PEP) as functions of d.c. plate input power measurements. We have rejected these estimates for the reasons stated in paragraph nine. Chester argues that the 1% of U.S. amateur operators using AM DSB should be permitted to operate with 4,000 watts PEP instead of 1,500 watts PEP, but we cannot reconcile this argument with the requirements of Section 324 of the Communications Act of 1934 (the Act), as amended (47 U.S.C §324) which prescribes that one should use the minimum amount of power necessary to carry out the communication desired. See also 47 C.F.R. §97.67(a).

3/ The inquiry notes that most of our radio services have technical regulations that exercise interference control by limiting the power, bandwidth and other technical parameters of emissions at the output of transmitters. The Amateur Radio Service is one of the few remaining services that had not, until this proceeding, been modified to adopt this approach. We long ago abandoned input power measurement standards in most radio services in favor of output power measurement standards.

11. Neither Chester, Society nor Strom set forth any new facts, issues or analysis to persuade us that adoption of output power measurement in lieu of input power measurement was erroneous. Our action is applicable to the entire Amateur Radio Service. The fact that it will have a more noticeable impact on one group of operators because of a combination of circumstances does not make it arbitrary or discriminatory, as argued by Society. In light of the above analysis, we find no persuasive reason to permanently exempt AM DSB operators from the new output power measurement rules. We believe that the provisions of the rules adopted in the Report and Order grandfathering input power measurement rules for AM DSB operation until 1990 minimize the immediate impact of this rule change upon such operation.

12. Accordingly, it is ordered that the Petitions for Reconsideration of Donald A. Chester, the Society for Promotion of Amplitude Modulation and Kevin Alfred Strom are denied. It is further ordered that the Motion for Clarification of the American Radio Relay League is granted in part consistent with this Memorandum Opinion and Order. It is further ordered that paragraph (b) of Section 97.67 of the Commission's rules is amended as set forth in the attached Appendix.

13. These actions are taken pursuant to Section 1.429 of the Commission's rules (47 C.F.R. §1.429) and Sections 4(i) and 303(r) of the Communications Act of 1934, as amended (47 U.S.C. §§154(i) and 303(r)).

14. It is further ordered that this proceeding is terminated. For further information about this document, contact Johh J. Borkowski, (202) 632-4964.

FEDERAL COMMUNICATIONS COMMISSION

William J. Tricarico
Secretary

Attachment: Appendix

Exhibit 6

United States Court of Appeals

for the District of Columbia

Glenn A. Baxter, P.E., amateur call sign K1MAN, Petitioner vs Federal Communications Commission, of the United States, Respondent	Docket No. 84-1504 BRIEF IN THE MATTER OF PETITION TO REVIEW REPORT AND ORDER AND MEMORANDUM OPINION AND ORDER OF THE FEDERAL COMMUNICATIONS COMMISSION

To the honorable judges of the United States Court of Appeals for the District of Columbia:

Now comes your Petitioner, Glenn A. Baxter, P.E.. radio amateur call sign K1MAN and requests this court to review a certain Report and Order adopted July 18, 1983 (Exhibit E) and Memorandum Opinion and Order adopted September 5, 1984 (Exhibit H) pertaining to FCC Docket 82-624.

Under U.S.C. 47 #402 your Petitioner duly filed his Notice of Appeal dated 21 September 1984 and duly served same on the FCC on 1 October 1984. Under Rule 8 of this court your Petitioner hereby files this Brief with the Clerk and has also sent one copy to Mr. John P. Greenspan, Esq., at the Federal Communications Commission, Washington, D.C., 20554 by pre paid United States Mail on this date.

NATURE OF THE PROCEEDINGS

The FCC adopted a Notice of Proposed Rule Making on September 1, 1982 (Exhibit A) seeking to improve certain rules governing maximum power permitted in the Amateur Radio Service. The FCC is required tofollow section 553 of the Administrative Procedure Act Art. 5 U.S.C. #553. Following publication in the Federal Register, interested parties were given opportunity to file both comments and reply comments. Petitioner and several hundred others did file comments for consideration by the FCC. See Exhibits B, C, and D. On July 18, 1983 the FCC adopted a Report and Order in the proceeding implementing the prop

proceeding implementing the proposed rules. (Exhibit E) Four parties sought reconsideration of the Commission's decision, two of which specifically objected to a power reduction in the year 1990 of conventional AM transmitters to one half of previously authorized levels. (Exhibits F and G) On September 5, 1984 the FCC adopted a Memorandum Opinion and Order which, among other things, turned down the request to allow continued use after the year 1990 of previously authorized AM transmitter power levels. (Exhibit H)

STATEMENT OF ISSUES PRESENTED FOR REVIEW

1. This Petition seeks only to get a one sentence addition to the new rule so that the power of AM transmitters will not be arbitrarily cut in half in the year 1990.

2. The Petitioner claims that in not allowing such a simple exception to the new rule, the FCC has made a gross oversimplification which needlessly takes away a long standing privilege that amateurs have enjoyed and vested an interest in for well over fifty years.

3. The FCC has given only erroneous and even frivolous reasons for making their decision regarding the AM power reduction.

In accordance with Rule 8(b) of this court, Petitioner hereby states that this case has never been before this court or any other court having jurisdiction over this matter either under this title or under similar title. Your Petitioner is not aware of any other cases that are related to this matter.

STATEMENT OF POINTS

The Commission has adopted a new method of measuring amateur radio ("Ham radio," not "C.B." radio) transmitter output power. Most people are familiar with AM and FM radios. AM and FM are different ways of transmitting voice or music. Amateur radio operators use additional transmitting methods such as CW (Morse code), SSB, RTTY, SCTV, television, and others. The new FCC method of measuring transmitter output

power is so over simplified that its effect on the different transmitting methods is radically different. For example, CW (Morse code) can now use more than double the previously authorized power while AM (high fidelity voice) must, in 1990, use one half the previously authorized power. This is unfair to those owning 3000 Watt peak envelope power output AM transmitters since the new ruling renders such equipment as useless as a swimming pool restricted to being used only half full of water. The rule is especially unfair when the simple addition of one sentence by the Commission to the new rule would allow continued use and enjoyment of 3000 peak envelope power output AM transmitters. The Commission gives no valid reason whatsoever for refusing to add the requested sentence and, in fact controdicts itself several times in different respects. For example, Exhibit A, Paragraph 2, last sentence the Commission states:

> "We desire to avoid changing the actual power that amateur radio stations use."

And yet most transmitting modes get an increase in power while AM gets cut in half. The Commission repeats the obvious error in Exhibit A, Page 5, Paragraph 13 by stating:

> "In arriving at a figure to specify as the authorized
>
> maximum transmitter peak envelope power, the Commission has endeavored to avoid any significant change in the power actually authorized to amateurs currently."

A cut in AM power by one half is indeed significant and unfair. And yet the Commission states in Exhibit A, Page 8, Paragraph 24:

> "We cannot stress enough our commitment to be fair to the intereste of all amateur operators..."

ANALYSIS OF FALACIOUS REASONS GIVEN BY THE COMMISSION FOR THE AM POWER CUT

1. The primary reason given by the FCC for not granting an exception to the new rule so that AM power will not be cut in half is found in Exhibit E Page 3, Paragraph 6:

> "We cannot justify a permanent and continuous expense in terms of equipment and training that would be necessary to make a special power measurement for this class of operations."

This reason is

This reason given by the FCC is completely erroneous. The identical equipment to measure all amateur transmitting modes including 3000 Watts peak envelope power output AM is used. It is as simple as measuring 10 pounds of apples as compared to measuring 5 pounds of apples on a 15 pound roadside scale. Both AM at 3000 Watts peak envelope power output and all other amateur power measurements are easily made with any Watt meter and any monitor scope commonly available in any store selling amateur radio equipment. Your petitioner makes this simple measurement routinely at his station and is fully qualified to make the above statement as the holder of an FCC First Class Commercial Radiotelephone License, Amateur Extra Class License, and being a Registered Professional Engineer, by examination, in Illinois and Maine. The Watt meter is inserted in series with the monitor scope in the 50 Ohm coaxial line anywhere between the transmitter and antenna tuner or antenna. Any amount of carrier is then applied and the meter deflection and scope deflection are recorded. Now SSB or CW or AM or any type of amateur peak envelope power output is measured by simply observing and recording the peak deflection on the scope. In my opinion as a Registered Professional Engineer, this is the simplest and only valid way of actually measuring compliance with the new FCC rule for amateur power output. The measurement for SSB and AM is identical and must use a monitor scope. Special equipment is not needed for measurement of AM at the presently authorized 3000 Watt peak envelope output level nor is special training needed.

2. Exhibit E, Paragraph 6 sluffs off the "...Actual power reduction..." as "... Generally insignificant in terms of communications effectiveness..." This is like saying that a 50 Watt bulb in your workshop is as good as a 100 Watt bulb. A 100 KW commercial transmitter costs hundreds of thousands of dollars more than a 50 KW transmitter and the difference in communications effectiveness sought can be hardly classified as insignificaat. FCC reasoning here is obviously erroneous.

3. The same paragraph further attempts to justify the cut in AM power by one half

by saying:

> "...Given the fact that only approximately one percent of the licensed operators use this mode..."

There are 400,000 licensed amateurs and it is supposedly O.K. to be unfair to only 4000 people. This is erroneous, arbitrary, discriminatory, and clearly violates the spirit and intent of the U.S. Constitution. All the FCC has to do is add one simple sentence to the new rule and 4000 people will ve treated fairly.

4. Finally, the same paragraph seeks to lessen the unfairn ss to AM operators by grandfathering the previous privileges for five years. This is completely arbitrary. The delay to 1990 seems to be calculated to seek default by any potential Petitioner.

5. The last reason given by the FCC for not allowing previously allowed AM power is in Exhibit H, Page 3, Paragraph 10:

> "We cannot reconcile this argument with the requirements of section 324 of the Communications Act of 1934 (the Act). as amended (47 U.S.C. #324) which prescribes that one should use the minimum power necessary to carry out the communication desired. See also 47 C.F.R. #97.67(a)..."

This reason is completely erroneous and a complete mis-application of section 324. What this section does mean is that if I am talking to a neighbor across town or in an adjacent state and 100 Watts of power is sufficient, then I should use 100 Watts, not 3000 Watts. If a 50 Watt bulb is sufficient in the hall way, use it, not 100 Watts. If I need to light my tennis court, however, 3000 watts would be appropriate and essential and significantly better than cutting that in half to 1500 Watts which the Commission does not admit.

Incidently, a radio transmitter is just like a light bulb except that radio waves are mush lower in frequency and cannot be seen with the human eye. A radio receiver must be used to convert radio waves into a form where they can be heard by humans or seen in the case of television.

For the FCC to mis-apply a rule to support their position is erroneous and irresponsible.

REASONS WHY THE RULE IS OVER SIMPLIFIED

The former Commission rule for maximum transmitter power for all kinds of transmitting was expressed in input power. For example, a 40 Watt florescent bulb might give out as much light as an 80 Watt incandescent bulb. The 40 and 80 Watt figures are measures of input power. The amount of light output, measured in candle power, is a measure of output power. The old Commission rule specified 1000 Watts of direct current input power and the new Commission rule specifies 1500 Watts of peak envelope output power. Just as with the light bulbs above, the input and output are measured in different quantities and in different kinds of measurement. When you get through making allowances for these differences, converting everything to the new rule has the ludicrous effect of more than doubling CW (Morse code) power and cutting AM power in half.

To understand how mathematics and science can play these tricks on you let me use the analogy of passing a new speed limit nationally of "One vehicle length per second." My 22 foot Cadillac would be allowed to go 22 feet per second or 15 miles per hour. But a guy with a 44 foot motor home would be allowed to go 44 feet per second or 30 miles per hour, twice as fast. This is, of course, rediculous when the object is to regulate speed, and cutting AM power in half while allowing other modes to double their power is just as rediculous. Changing to a new rule of a flat limit of 1500 Watts of output power without an exception for AM is simply not adequate and over simplified.

FAILURE OF THE COMMISSION TO CONSIDER COMMENTS FROM THE PUBLIC WHICH ARE PART OF RULE MAKING PROCEDURE AND PART OF OUR INGENIOUS SYSTEM OF DUE PROCESS

It is with a deep sense of frustration and disappointment that your Petitioner appeals an apparent abrogation of due process caused by the Commission ignoring and even dis-

torting public comments which is an essential part of FCC rule making procedure. The Commission Report and Order, Exhibit H, Page 2, Paragraph 3 separates the "Several hundred comments" into two categories saying that "...The majority of comments not addressing the effect of the proposal on AM operations supported the proposal..." This statement could be true is all but three comments addressed the AM power reduction and two of those three favored the FCC proposal, with the balance opposing the proposal. The fact is that most of the comments, considered as a whole as they should be, did not favor significant parts of the proposal and the majority of comments by far specifically opposed the AM power reduction.

A significant example is that the FCC ignored comments of the American Radio Relay League which has 150,000 members and is the primary representative of licensed amateurs in the United States. See Exhibit B, Page 4, Paragraph 3. The American Radio Relay League asked the FCC to Grandfather AM power permanently and the FCC ignored this request along with similar requests from the Society for the Promotion of Amplitude Modulation, the Editor of the AM/Press Exchange, the Petitioner (See Exhibit C and Sandy Gerli (See Exhibit D). The FCC has not only ignored public comments but has distorted these comments in their Report and Order.

One gets the feeling that a single individual handled this docket from beginning to end and that the Commission simply "rubber stamped" it without anyone else at the Commission getting involved to a point where due process was served.

WHERE THE COMMISSION IMPROPERLY DISCRIMINATES

This Petition has already mentioned that Exhibit E Paragraph 6 advances the FCC argument that AM operators only constitute 1% (4000 people) and therefore implying insignificance. Here, 4000 people are clearly being discriminated against.

In Exhibit A, Page 6, Paragraph 15 the FCC recognizes that"considering the equipment

that amateur operators may already own, some operators may consider a 1 Db. decrease in the maximum authorized power to be significant." (Petitioner points out that a 1Db. decrease is radio talk for a decrease from 1300 Watts to 1000 Watts.) The FCC goes on:

> "..Consequently, a 1000 Watt specification may not be well accepted for all operators..."

And yet the subsequent paragraph 17 mentions that a cut in half (from 3000 watts to 1500 Watts)is somehow different from the above. The FCC is clearly discriminating here and this is clearly erroneous.

On Page 8, Paragraph 23 of Exhibit A, the FCC invites comments on making an exception for type P emissions and yet does not even consider making an exception for AM. Type P represents even less than 1% of the amateur population. Here again the FCC clearly discriminates against AM operators.

IMPACT OF CUTTING AM POWER IN HALF

Amateur radio has always been at the cutting edge of science and technology and amateurs have always made significant contributions to the field of electronics. Amateur radio is also a preliminary training ground for future engineers and scientists. The population of young amateurs that experiment with AM equipment available at flea markets for low cost is more technically competent than the majority population of amateurs who buy brand new "store bought" equipment made in Japan. The reason is simple. The former group of AM operators make their own repairs and design modifications while the latter group of "store bought" operators send their equipment back to the factory service center for repair. The amateur radio service, which supplied this country with virtually all its pre trained radio operators and communications specialists during World War II is slipping down hill into a large group of technically incompetent "appliance operators." The new FCC rule and discrimination against AM experimentation with higher power equipment will only accelerate this very unhealthy trend. As a nation which needs more scientists and engineers coming up

through the ranks, we are slitting our own throats with any new rule which thwarts such experimentation and learning of basic electronics. AM was the first and is the most basic form of voice broadcasting and has far better fidelity than another method known as SSB or single side band. On AM a person sounds just like himself, but with SSB, a person does not sound natural, more like a cross between Donald Duck and having a cloths pin on your nose. It is significant to note that there is a trend back toward the more basic AM just as many Americans are going back to more basic life styles and more natural foods. It is also significant to note that all the new radio transmitters being sold to us from Japan, which constitutes a majority of all transmitters, now incorporate the AM mode as well as SSB.

The effect of cutting AM power in half will ruin the inherent value of the thousands of transmitters now in use which have been designed for 3000 Watts peak envelope power output. Your Petitioner owns and operates two such transmitters which have a present market value of $4,000.00. One is commercially built and one I designed and built myself. The one I designed and built while I was still in school I consider to be a most important part of my electronics and professional engineering education. Had this new rule been in effect back then, my personal education would had suffered significantly. Also, the new rule, in effect destroying my $4,000.00 investment amounts to "Taking of property without justification or due process of law" and this violates the Fourteenth Amendment to the Constitution of the United States which guarantees that "...No citizen shall be deprived of life, liberty, or property without due process of law or without just compensation."

SUMMARY

In summary, the new FCC rule cutting AM power in half is arbitrary, unfair, harmfull, and opposed by everyone including the American Radio Relay League. The solution is as simple as adding one sentence to the new rule.

PRAYER FOR RELIEF

Petitioner seeks to permanently grandfather the present authorized AM power limit by changing rule 97.67 (b) to read:

> "Each amateur radio radio transmitter may be operated with a peak envelope power output (transmitter power) not exceeding 3000 Watts for A.M. DSB and 1500 Watts for everything else, except as provided in other limitations of these rules."

Wherefore, Petitioner prays that this honorable court set aside the FCC AM power reduction scheduled for the year 1990.

/s/ G. A. Baxter

Glenn A. Baxter, P.E., KIMAN
Registered Professional Engineer

Long Point Lodge
Belgrade Lakes, Maine 04918
(207) 495-2215

Dated 6 November 1984
Yea, yea, yeaallow

CERTIFICATE OF SERVICE

I hereby certify that I mailed one copy of this brief by pre paid United States mail to Mr. John P. Greenspan, Esq., at the Federal Communications Commission, Washington, D.C. 20554 on this date, 6 November 1984.

/s/ G. A. Baxter

Glenn A. Baxter, P.E.

IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

Exhibit 7

No. 84-1504

Glenn A. Baxter, Petitioner, vs. Federal Communications Commission

STATEMENT

As an interested party, having participated in Rulemaking Proceeding PR Docket No. 82-624, I wish to make the following written statement.

I. The Commission has reduced its case for arbitrarily reducing the the power limit for AM DSB emissions in the Amateur Radio Service to just one contention: the Commission attempts to justify taking away privileges from amateur licensees solely for the Commission's convenience, to facilitate their task of writing a power limit rule which they perceive as "simple, unambiguous," with sufficient "clarity" to "avoid confusion."

In the original Docket proposal (see NPRM, PR Docket 82-624, released October 1, 1982) the Commission stated (in para. 2): We desire to avoid changing the actual power that amateur radio stations use." (In para. 24) the Commission states: "We cannot stress enough our commitment to be fair to the interests of all amateur operators."

We are not attempting to challenge the Commission's authority to formulate rules limiting the power of licensed radio stations or to determine what measuring techniques will be used as a basis for the rules, nor do we claim that amateur licensees have an inalienable right to operate any emission mode at any particular power level. Nevertheless, the arbitrary AM DSB power reduction violates the Commission's own stated intent as quoted above, and unfairly discriminates against one particular creed of amateur radio operators, whose specific interest in amateur radio communication is AM DSB emission. This clearly violates the 14th Amendment of the United States Constitution, which guarantees all citizens the "equal protection of the laws."

II. In my petition for reconsideration (see exhibit F, page 44, appendix, of the Commission's Brief for Respondents), I asked the Commission to consider permanently grandfathering the AM DSB power limit by simply expressing theequivalent output power historically allowed for this mode under the old rules, in terms of the Commission's new chosen standard peak envelope power output. Under the old rules amateurs are allowed at least 4,000 watts p.e.p. output when transmitting AM DSB. In denying my petition, the Commission entirely dodged one of the substantial issues I raised and responded with a completely irrelevant argument, claiming that this could not be "reconciled" with the requirements of Section 324 of the Communications Act of 1934 (as amended), which prescribes the use of the minimum power necessary to maintain the desired communications. Section 324 is a totally separate matter from the maximum power limit as prescribed in Section 97.67(b) and (e) of the amateur rules. Even if the maximum power limit were increased to 40,000 watts p.e.p. output (ten times the figure I suggested), this would in no way nullify the requirements of Section 324. The power limit rule in question, the maximum power limit, puts a cap on the maximum allowable power under any circumstances; on the h.f. bands, conditions frequently become such that even 4,000 watts p.e.p. output falls far short of the minimum power necessary to maintain communications. Section 324 merely states that regardless of the maximum prescribed power limit, licensees are not to use unnecessarily high power levels to carry on the desired communications when a power level substantially below the legal limit would be sufficient.

The Commission's argument is rendered even more irrelevant to the matter at hand by the fact that Morse telegraphy, whose communications effectiveness is far superior to that of any form of voice transmission used by amateurs operating at a comparable

power level, was generously granted a 100 per cent increase in maximum effective output power under the new rules. Why did the Commission not find this "irreconcilable" with Section 324 of the Act?

III. The Commission elaborated on its "strong commitment" to specify only one figure for amateur transmitting power. Nevertheless, the rules already provide several exceptions to the 1500 watt figure. The limit for Novice Class operators and subbands, and the 10.10-10.15 mhz band is 200 watts output. On certain VHF, UHF and microwave bands, special power limits are in effect in some areas of the country to protect other radio services (see Section 2.106 Footnote US7, and Section 97.3 (d)). One additional simple exception, permanently grandfathering the existing historical full carrier AM DSB power limit, would hardly add to the "complexity" of the amateur rules.

CONCLUSION

The rules changes under PR Docket 82-624 violate the US Constitution by arbitrarily taking away privileges from one creed of amateur operators, for no reason other than the Commission's own perceived convenience. The Commission's Memorandum Opinion and Order is not in compliance with the Administrative Procedures Act because the Commission completely failed to address one substantial issue raised by my petition for reconsideration, and instead erroneously addressed a totally irrelevant matter, that of Section 324 of the Communications Act, which has nothing to do with the power limit as prescribed under Section 97.67(b) and (e) of the rules.

9 September, 1985

Donald B. Chester

Donald B. Chester

Exhibit 8

Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Amend/modify Section 97.305)
Authorized Emissions usage)
in the Amateur Radio Service)

Request the Federal Communications Commission phase out Double Side Band Full Carrier Amplitude Modulation (A3E) usage below 30 MHZ. in the Amateur Radio Service except for emergency and/or disaster communications where no other means of communication is available.

Presently; except for Standard Commercial Broadcasting and the Shortwave Broadcast Service, Amplitude Modulation (A3E) for voice communications has been replaced by Single Side Band Suppressed Carrier (J3E) because of its efficiency and reliability and; foremost, its spectrum conservation.

Today Amplitude Modulation (A3E) is far removed from modern state-of-the-art communications and no longer serves a practical purpose in any communication service. This also applies to the Amateur Service where spectrum conservation and interference reduction is of prime importance.

Amplitude Modulation (A3E) is to voice communications today as Damped Wave (B) mode was to Continuous Wave (A1) 55 years ago when it was deleted from the Amateur Service.

Respectively submitted,

W. B. Prechtl, W3KO
295 Strapper Road
Bridge City, Texas 77611

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the matter of	)	
Request to amend Part 97	)	
to delete and phase out	)	RM-7401
double sideband full carrier	)	
amplitude modulation usage in	)	
the Amateur Radio Service	)	

COMMENTS by Donald B. Chester, K4KYV
2116 Old Dover Road
Woodlawn, TN 37191
19 July, 1990

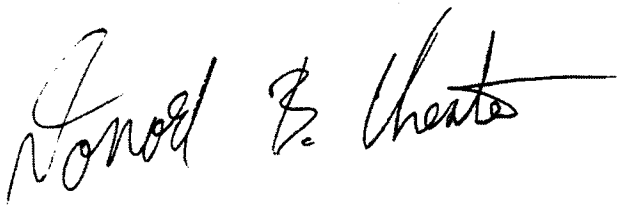
To the Commission:

I am opposed to the petition by W.B. Prechtl that requests the elimination of the AM DSB mode in the amateur service.

Presently, this mode is widely used in the 1.8-2.0 mHz. and most HF bands. The proposed loss of privileges would deprive a substantial number of amateur operators of their preferred facet of the hobby.

Mr. Prechtl states his petition is based on two reasons: spectrum conservation and "state-of-the-art" technology. The same proposal was brought up by Robert W. Stankus for identical reasons, in RM-3665 of April 28, 1980. Mr. Stankus' petition was clearly and soundly rejected by the Commission as explained in the ORDER (PR 07646) of February 26, 1981 (see attached copy).

Mr. Prechtl's petition fails to bring up any new or novel issues and should be summarily dismissed.



Donald B. Chester, K4KYV

This is to certify that one copy of this COMMENT has been served on the petitioner.

Before the
Federal Communications Commission
Washington, D. C. 20554

PR
07646

In the Matter of	)	
	)	
Petition to amend	)	RM-3665
Part 97 to eliminate	)	
the use of Amplitude	)	
Modulation for	)	
voice communications	)	
in the Amateur Radio	)	
Service	)	

O R D E R

Adopted: February 26, 1981 Released: March 4, 1981

1. The Commission by its Chief, Private Radio Bureau, acting under delegated authority, has under consideration a petition for rulemaking in the Amateur Radio Service, RM-3665, filed April 28, 1980. Petitioner Robert W. Stankus of Easton, Connecticut, requests that the Commission prohibit amplitude modulation (AM) for voice communications in the Amateur Radio Service. Mr. Stankus suggests the Commission adopt the following two rule amendments to achieve his proposal. The first proposal would become §97.65(f):

> On all amateur frequencies, A3 emission hereafter, shall consist of radio telephony comprising one sideband with suppressed carrier. 1/ The maximum bandwidth shall not exceed 3.75 kHz, inclusive.

The second rule amendment would become §97.130:

> No licensed radio amateur whose privileges permit the use of phone transmissions, will use a transmission method of two sidebands and a carrier. The accepted voice transmission shall be one sideband with suppressed carrier. Bandwidth not to exceed 3.75 kHz.

In order to provide an orderly phase out of amplitude modulation equipment, Mr. Stankus recommends January 1, 1985 as the effective date for his proposals. The Commission received eighty three comments in this proceeding. Only one comment supported the petition.

1/ §2.201 defines amplitude modulation as A3 with two sidebands.

2. Mr. Stankus states his petition is based on the following reasons: amateurs should make better use of the spectrum, amateurs should progress in the state of the art by abandoning an obsolete method of communications, and more innovative advancements have been made in the amateur radio service through the use of single sideband transmissions.

3. Mr. Stankus' motives conflict with the Commission's goals for the Amateur Radio Service as defined in §97.1 and 97.3 of the Rules. For example, the Rules define the Amateur Radio Service as "(a) radiocommunication service of self-training, intercommunication, and technical investigation carried on by amateur radio operators." (§97.3(a)). Also, §97.1(b) states the purpose of the Amateur Radio Service as the "(c)ontinuation and extension of the amateur's proven ability to contribute to the advancement of the radio art." The Commission's aim is to provide the amateur radio operator with diverse modes of communication for experimentation rather than restricting him/her to certain specific methods of communication. Further, numerous comments indicated that AM communications provided operators with their introduction to amateur radio. AM equipment is easier to build and has provided many operators with the necessary incentive to become interested in more advanced areas of amateur radio. The comments indicated that for the Commission to phase out amplitude modulation would deprive many operators of their hobby because their equipment would become obsolete and they could not afford other equipment. Mr. Stankus' proposal appears to be restrictive as well as a deterrent to experimentation.

4. Mr. Stankus has provided unpersuasive arguments for his petition. He states he conducted an impartial survey and found less than five thousand amateurs still using AM. However, he provides no data to support his conclusions. Also, he claims that manufacturers no longer produce AM transceivers. On the contrary, current amateur radio catalogues show several amateur radio transceivers available for sale with AM capability. If Mr. Stankus' claims were valid, there would be little reason for the Commission to impose a ban on a mode which was rarely used.

5. Accordingly, in view of the foregoing, it best serves the public interest to dismiss Mr. Stankus' proposal to ban amplitude modulation as a means of voice communications in the Amateur Radio Service. Therefore, because petitioner presents no new or novel issues, and pursuant to authority delegated by Section 0.331(a)(3) of the Commission's Rules, IT IS ORDERED, That RM-3665 IS DISMISSED.

FEDERAL COMMUNICATIONS COMMISSION

Carlos V. Roberts
Chief, Private Radio Bureau

Exhibit 9

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Section 97.313 of the Commission's Rules Governing Transmitter Power Standards in the Amateur Radio Service	)	RM-

To: The Chief, Private Radio Bureau

PETITION FOR RULE MAKING

Submitted by: Dale Gagnon, KW1I
9 Dean Avenue
Bow, New Hampshire 03304

April 17, 1990

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Section 97.313 of the Commission's Rules Governing Transmitter Power Standards in the Amateur Radio Service	)	RM-

To: The Chief, Private Radio Bureau

PETITION FOR RULE MAKING

1. Introduction

This petition proposes a replacement paragraph for Section 97.313(b) of the Commission's rules governing transmitter power standards in the Amateur Service. The present paragraph was put in place by the Report and Order for PR Docket 82-624, released July 22, 1983. It set a 1500 watt peak envelope power (PEP) maximum for transmitter power and included a separate interim power measurement for transmitters operating emission A3E. This interim measurement period for A3E is scheduled to expire June 1, 1990. The expiration of the separate power measurement for A3E will harm a significant number of amateur radio operators.

This petition proposes rulemaking that will avoid this harm and will satisfactorily address the Commission's concerns about uniform power measurement methods.

2. Proposed

Part 97.313(b) replacement paragraph:

No station may transmit with a transmitter power exceeding 1.5kW PEP. Stations operating A3E are exempt from this requirement, but must not exceed .75 kW carrier power.

3. Basis for FCC Consideration

In Paragraph 17 on page 6 of the Notice of Proposed Rule Making for PR Docket No. 82-624, released October 1, 1982, the Commission stated that a single 1500 watt PEP rule will limit AM DSB operations to approximately half of current maximum operating power. The Commission recognized that there was still some interest in the mode and consequently proposed to "grandfather" such operations.

In Paragraph 6 on page 3 of the Report and Order for PR Docket No. 82-624, released July 22, 1983, the Commission put the present "grandfather" term in place, due to expire on June 1, 1990. The Report and Order stated, "If it appears there is any justification to do so, we will reconsider the matter at that time".

Since the reason for the "grandfather" clause in the first place was a certain level of interest in the mode in 1982-83, an appropriate justification for reconsideration is the present increased level of interest in AM. This increased interest can be demonstrated by the current AM activity on the amateur bands, the significant increase in the membership of the Society for the Promotion of Amplitude Modulation, SPAM (from 362 in 1983 to over 1000 in 1990), the growth of the monthly AM Press Exchange

newsletter and the recent entry and growth of the monthly magazine Electric Radio. Both of these publications are focused on AM topics and operations.

The ability of the AM community to successfully petition the American Radio Relay League for support of historic AM power privileges, as expressed at the January ARRL Board of Directors meeting, is also a measure of the heightened level of AM activity.

4. Harm to Amateurs Owning High Power AM Transmitters

If the maximum power limit is halved for AM, many AM kW transmitters will become obsolete. This will cause economic injury to amateurs. Norm Scott, WB6TRQ, president of the Society for the Promotion of Amplitude Modulation, (SPAM) has estimated there are approximately 400 commercial and 1000 homebrew high power AM transmitters in use today. Few of these transmitters have the built in ability to operate at half power. Low power operation is normally done with a smaller transmitter for efficiency reasons. Cutting the power in half on a large transmitter requires either a new plate transformer or a variac control on the plate supply. This modification alone would cost several hundred dollars using new materials and home labor. Screen and grid bias supplies would often have to be changed as well.

5. Interference Potential Impact

The potential for increased interference from high power amateur AM transmitters due to the proposed rule is negligible. In spite of the resurgence of the use of this mode, the expected number of

additional high power transmitters in the years ahead is not likely to be large for the following reasons.

- .the incentive for running a KW of AM has not changed for over 50 years
- .most commercial AM KW transmitters still in existence have been placed back in service
- .there is no commercial incentive for new manufacture
- .homebrew components are scarce and expensive
- .amateur linear amplifiers designed for 1500 watt PEP CW or SSB service are not capable of a kilowatt of AM

The proposed rule does not ask for a change in the maximum power level, just a continuation of the present level. With roughly the same number of transmitters capable of running historic power levels it is unlikely there is a risk of increased interference problems.

6. Carrier Power and Peak Envelope Power

In paragraph 12, page 5 of the Notice of Proposed Rule Making for PR Docket 82-624 the Commission states, "PEP measurements, on the other hand, can be unambiguously applied to virtually all emisssion types and can be easily computed from carrier power for many popular emission modes". The footnote to that sentence includes, "For AM DSB (A3) emissions, modulated 100%, the PEP is approximately four times the carrier power".

Carrier power has been defined as the average power supplied to the antenna transmission line by a transmitter during one radio frequency cycle taken under conditions of no modulation.

Using the Commission's observation it would be very simple to verify the power of a fully modulated AM transmitter, and its

associated maximum interference potential, within a fraction of a decibel by measuring the unmodulated carrier.

For traditional 1 kW input power class AM transmitters, the output efficiency is approximately 75% for Class C operation. Under periods of no modulaton, a .75 kW carrier would be indicated on either an average or a peak reading wattmeter. The present amateur rules establish CW maximum power in watts PEP. A key down CW signal is exactly the same as an unmodulated AM carrier, so measuring an unmodulated carrier's power with a PEP wattmeter would be consistent with FCC methods.

7. FCC Equipment and Training Expense

In Paragraph 6, page 3 of the Report and Order for PR Docket 82-624 it states, "However, we still cannot justify a permanent and continuous expense in terms of equipment and training that would be necessary for us to be prepared to make a special power measurement for this class of operations."

If the AM DSB maximum unmodulated carrier power limit is set at .75 kW, the Field Operations personnel of the FCC will require only notification. No equipment or training expense will be required. The measurement of an AM transmitter will be even easier than measuring a single sideband transmitter because no audio level has to be introduced into the transmitter to obtain a reading. The existing measurement equipment will not require a scale change or new wattmeter calibration element (Bird slug). The maximum power reading will be half (.75 kW) what is normally expected with other emission types.

8. Spectrum Efficiency

In Paragraph 17, page 6 of the Notice of Proposed Rule Making of PR Docket No. 82-624 it says, "And while this power reduction might be appropriate for an emission type which, by today's standard, is spectrum inefficient,..".

It is important to note that actual AM operations on the amateur bands are not necessarily spectrum inefficient.

AM is not in competition for crowded spectrum. AM is almost channelized on bands below 30MHz in what AM operators call "AM windows". A SSB operator can choose to operate in 90+% of the amateur phone bands and can be assured of never being adjacent to an amateur AM signal. AM operation is typically in roundtables, delivering approximately the same number of operator QSOs per KHz of spectrum as SSB. Most AM operators enjoy AM because it sounds good and part of sounding good is getting away from interference from adjacent signals. That is why AM is prevalent on 160M high in the band, on 75M and 40M during mid-day and late at night and on 10M above 29MHz.

9. Minimum Power

The minimum power regulation applies to all modes equally well and has no special application to AM. There will always be operating conditions on each mode that necessitate additional power, up to the maximum allowed, to carry out the desired communication.

10. Summary

The current increased level of AM interest is a compelling reason to reconsider the upcoming power regulation change for AM. Reducing the maximum allowed power would be unfair and harmful for a significant number of amateurs who have the capability of running AM at the maximum levels that have been in place for over a half century.

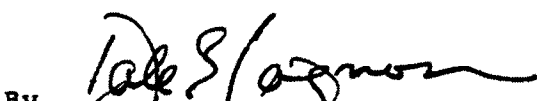
The proposed rule on the other hand, would treat these amateurs fairly, while at the same time bring no harm or expense to the Federal Communication Commission, the larger amateur community or the general public.

The proposed rule would use the Commission's chosen standard of PEP output. It would not cause the Commission additional equipment or training expense in the field.

The proposed rule does not change the maximum power level for AM, providing no new motivation for higher power that would increase interference potential.

I respectfully request the Commission to consider this petition for rule making and to postpone the expiration of the Part 97.313(b) "grandfather clause" during the period of rule making process.

Respectfully submitted,

By 

Dale E. Gagnon, KW1I